EVERYDAY READING

PEARSON AND HUNT

BOOK TWO

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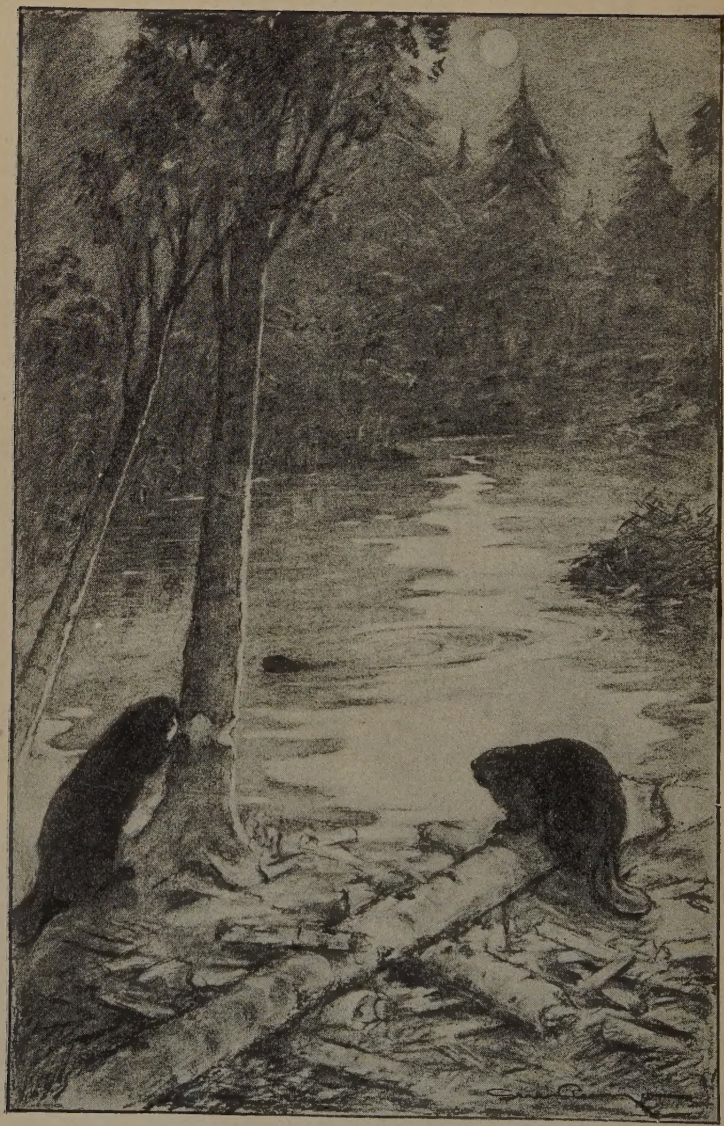

Beavers at Work

EVERYDAY READING

BOOK TWO

BY

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HUNT'S EVERYDAY READING BOOK TWO

E.P. 9

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PREFACE

RECENT investigations and scientific studies show that reading is a highly specialized process; that there are numerous types of reading, for the best development of which special training is necessary; and that fully ninety per cent of all reading is done silently.

The purpose of these readers is to train pupils to read well silently. They provide selections that will give specific training in the important types and uses of everyday reading, and likewise contain practical exercises that will be helpful in building fundamental reading skills. The following are some of the more important types of everyday reading and uses for which they are presented:

1. Selections for rapid reading for pleasure.
2. Selections for careful reading to get the exact thought.
3. Selections for reading to get the main idea.
4. Selections for reading for the purpose of preparing outlines.
5. Selections for reading to get the answers to specific questions.
6. Selections that will give training in rapid reading.
7. Selections that will afford training in the kind of reading necessary in the study of geography, history, science, and arithmetic.
8. Exercises that will train the eyes to see several words at a glance.
9. Exercises for increasing the vocabulary.

The limited amount of material that this series of readers contains should not be expected alone to develop good habits of reading and study. It ought, however, to point

the way to methods of procedure which, if applied in all other reading, will be permanently helpful.

Most of the current sets of readers emphasize literary material and neglect the other types that pupils need to know in order to meet the problems of actual experience. These books, therefore, are not designed to take the place of any basal readers that a school may be using, but rather to supplement such readers.

The primary purpose of this silent reader is not the development of literary appreciation. Emphasis has been given, rather, to informative material, since such material is especially well adapted to the testing of accuracy and speed of reading. A great variety of material is provided, some for rapid reading, some for careful and exact study, some for the selection of the main ideas, and some for topical analysis. In general the selections are easy, so that pupils may not be unduly handicapped by linguistic difficulties. Constant emphasis is given to the fact that the fundamental purpose of all reading is to get thought from the printed page.

The *Manual for Everyday Reading, Books One, Two, and Three* gives such explicit and complete instructions for the use of all material that inexperienced teachers can get gratifying results. For the experienced teacher it offers workable devices to help the very poor pupils, and suggestions for obtaining variety in teaching procedure.

Careful directions are given the teacher which will enable her to measure the ability of each pupil in speed and comprehension. Numerous passages for testing are provided in the texts and explained in the manual by which the reading ability of each member of the class may be learned, and by which progress during the year may be measured. As there is great waste in mass instruction, for the same method may not be used effectively on widely different pupils, the teacher is directed specifically how to divide

a class into groups according to reading ability, and how to meet the special needs of each group.

In addition to the discussion of the general problems of reading, the manual contains three sections devoted to detailed suggestions for lesson plans. Every selection is explained, its type and its relation to other types made clear, and its teaching methods suggested.

The employment of *Book Two* of this series will be found to be generally adapted to the fifth-grade work; but local conditions may be such that a year's variation either way is advisable.

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EVERYDAY READING

BOOK TWO

1. BEAVERS AT WORK AND AT PLAY

This boy had a wonderful opportunity to see some beavers at work and at play in a pond. You will enjoy reading about beavers and will want to know more about them. After you have read this selection, make a list of questions about beavers and their habits.

I ALWAYS enjoyed spending my vacations with Uncle George. He lived on a big farm far up in the mountains, and I was sure to have some wonderful experiences there.

One afternoon after my arrival, Uncle George said, "Come with me and I will show you an animal you have never seen before." After we had tramped for about a mile, we came to a pond where he pointed out a pile of brush and sticks which he said was a beaver's house. "There was no pond here last year," he said. "It was all low land, through which a small brook ran. At the other end of the pond you can see where the beavers have built a dam. If we sit here quietly, we may see one of them. It is lucky that the breeze is blowing toward us, for beavers have a very keen sense of smell and can detect human beings a long way

off if the wind does not carry the scent away from them."

We sat there until the sun had almost set and the lengthening shadows were beginning to darken the edges of the pond. It was difficult to see clearly, but presently we made out a dark object moving slowly on the surface of the water. It was a beaver who had ventured to leave the protection of his well-built house, and was looking around cautiously to see if it was safe to begin his night's work. He was now near the middle of the pond where he could better sniff the currents of air which would perhaps carry to his keen nose the scent of any enemy who might be lurking in the neighborhood. Apparently everything was safe, but he considered it wise to make still more sure. He swam a short distance, and disappeared beneath the water so softly that scarcely a ripple marked the place where he dove. A few minutes later he quietly reappeared close to the shore of the pond. Once more he remained as still as a floating log, his nose pointed toward the gentle breeze and his ears raised to catch the slightest sound.

Apparently the beaver decided that no enemies were near and signaled to his companion, for in a few minutes we saw another dark object with a branch held in his teeth swimming toward a pile of wood near the beaver house. On arriving at the brush pile, he took a fresh grip with his teeth and dived down carrying the branch with him. He must have pushed

his branch under the whole pile, for we saw the surface of it tremble slightly.

We had all this time been almost holding our breath for fear of making the slightest noise, but in spite of our precautions the first beaver discovered us, and with a heavy whack on the water with his broad tail he disappeared. "It is no use to stay any longer," said Uncle George. "We have scared them and there is nothing more for us to see to-night."

The next morning I visited the pond again with many questions in my mind about the beaver. I did not expect to see any beavers in the day time, but I was curious to find out about their house, the dam, and where they got their wood.

On the further side of the pond I found a grove of young aspen where they had evidently been at work, for there were dozens of stumps which showed where the trees had been gnawed off with sharp beaver teeth. Some of the trees lay on the ground, evidently having been recently felled, for their branches were untouched, while other trunks had been neatly stripped of their branches and cut into convenient lengths of three or four feet. As the aspen grove was nearly one hundred yards from the edge of the pond, no wood could be brought to the water before a roadway had been made. Part of this was really a canal which had been cut through the swampy ground at the edge of the pond and from which all obstructions had been carefully

removed. This canal was about three feet in width and a little over a foot deep. On the shore the path was rather wider and led directly from the end of the canal to the center of the grove, where it branched out in three directions so as to reach different parts of the grove.

I was determined to see how the beavers worked. The next evening was clear and the moon was shining brightly. Concealing myself in a place that I chose with great care, I waited for the busy little creatures to appear.

In about half an hour I caught sight of a large beaver waddling slowly up the much used trail. He was apparently uncertain which tree to tackle, for he looked at several before he chose an aspen that was about four inches in diameter. Squatting on his hind legs with his broad tail stretched out behind to act as a balance, he placed both of his front feet against the trunk. He made a row of bites around the tree; then several inches higher he made another row; after this he split and bit out the space between these two cuttings. After he had worked this way for several minutes he stopped to rest, refreshing himself by eating a mouthful of bark.

By this time several other beavers appeared and set to work getting the branches and small logs down to the pond. If the branch was small and light, the beaver held it in his teeth so that most of it hung

over his shoulders. Sometimes he walked on his hind feet only, with his front feet holding the branch. The heavier logs were pushed or rolled either with the head or with the chest. When the beavers reached the canal, they swam with their burdens, guiding them carefully.

During that vacation I paid many visits to the beaver colony, but was not lucky enough or skillful enough to see much more of their work. Later in the spring, however, I had a rare treat. By this time I had learned the necessity of approaching the pond with extreme care and of taking account of the way in which the breeze was blowing. One day I saw three young beavers frolicking about in the water like kittens on land, playing among the water lilies and splashing themselves with their tiny, flat tails. They played hide and seek like children, and they pushed each other off the half submerged logs exactly as boys would do. Then they sat on the banks of the pond, and after making a careful toilet indulged in the luxury of a sun bath, apparently sleeping but always watchful. They never knew when a hawk might swoop down upon them.

I was particularly pleased to have a chance to find that young beavers know how to play hard. I had always heard the expression "Work like a beaver," and I now feel certain that the beaver prepares for his life of hard work by learning how to play hard when he is young.

2. THE BEAVER

As you read the preceding selection, you became interested enough to think of questions about the beaver. This article, which is taken from an encyclopedia, should contain answers to those questions. Read it carefully to find the answers.

HAVE you ever heard the saying "as busy as a beaver"? Any one who has ever had the good fortune to see a colony of these water animals at work has no difficulty in understanding these words; for beavers are among the most intelligent and industrious of animals, and the dams and houses which they construct are wonderful products of animal skill.

The beaver belongs to the group of gnawers or rodents, and is the largest and heaviest of that family. A large beaver measures about two feet from the tip of his nose to the root of his tail, and the tail adds about a foot more. The weight of such a specimen is about thirty-five pounds, but large old specimens may weigh seventy-five pounds. The tail is not the least curious feature of the beaver, for it is broad and flat with a horny covering resembling scales. The front teeth are remarkably large; and like the front teeth of the squirrels, rabbits, and other gnawing animals, they are hard in front and softer behind, so that by use they become worn to chisel edges. The beaver's

hind feet are webbed for swimming, and the flattened tail serves to guide the swimmer and to splash the water for a warning signal. He is a splendid swimmer and diver. Frequently he remains under water for fully two minutes.

Beavers are social animals. A family of several members usually lives in one house, and sometimes a large number of families collect in one community. They usually work at night, and build their houses or lodges well concealed from man in small lakes or ponds made by damming a forest brook. Their houses are shaped like ovens and are built of sticks, grass, and moss, woven together and plastered with mud, so strong as to protect the inhabitants from beasts of prey. The room inside may measure eight feet in diameter and two or three feet in height, and the floor is carpeted with bark, grass, and wood chips. There are two entrances, both under water. One, called the beaver entrance, is often winding in its course as a protection against enemies. The other is straight, and is used both for taking in the wood for winter food and as a means of escape in case of invasion by a mink or other water enemy. Both these entrances open into a moat around the house, too deep to freeze solidly, so that the beavers are not likely to be shut in.

In order that they may easily pass back and forth under the winter's ice, and that they may have room to store food, the beavers build dams to increase the

water about the lodges. These dams are often of great size; indeed one is reported 1530 feet long. The first step in dam building is the selection of a suitable site, a narrow place in shallow water where there is firm bottom. Then the work of felling trees is begun. Standing on their hind legs, the beavers gnaw round and round the trunk with their chisel-like teeth until the tree is ready to fall. Sometimes trees eighteen inches in diameter are thus cut through by these sagacious animals.

After the tree is down the beavers set to work lopping off branches and cutting the trunk into lengths which they can drag into the water. The short logs, dragged or floated to the desired spot, are sunk parallel with the current; and if the water is deep they are kept down by means of stones, sod, and mud loaded on by the beavers. Mud and stones and heavier timbers are carried in their forepaws and small timber between their teeth. There is no superintendence in their work, but each beaver does what seems to him best. The result is that the dam is usually a tangled heap, but it serves its purpose. In old dams willow and poplar logs have sprouted and sometimes have grown into large trees.

The beaver feeds mainly on the bark of willow, poplar, and birch trees, and on roots, buds, berries, and leaves. A store of green logs is always sunk in the water at the doors of their houses for winter feed-

ing. When all the trees near the water are used and the land is too uneven for rolling, log-slides and canals are cut in the banks and bottom to carry down the timbers. These channels may be hundreds of feet long and about a yard in width and depth. One of the chief uses of the beavers' dams is to insure sufficient water to float these logs.

The soft thick gray under-fur of the beaver has long been highly valued by man, and during the seventeenth and eighteenth centuries beaver skins held first place in the world's fur trade. At that time, before the invention of the modern silk hats, men's hats were made from beaver skins, and hence the word beaver often meant hat. So great was the demand for beaver fur that in the western part of Canada and the United States beaver skins at times passed as currency.

Formerly this animal was distributed through the wooded part of the Northern Hemisphere, but it has been hunted until it is almost exterminated in settled portions. In the United States it is scarcely found east of the Mississippi. Occasional colonies are known, however, in Maine, Virginia, and a few other places.

Rigid protection is afforded in most American states and in eastern Canada, and a plea has been presented for a game and fur preserve in the Canadian northwest. In Itasca Park, in Minnesota, the beaver has in recent years multiplied rapidly under protection.

Friends of the beaver have encountered opposition

because of the great damage the animal sometimes causes by flooding tracts of valuable timber. Its good deeds, however, outweigh the bad. By building a series of dams in mountainous districts, the beavers form ponds which hold the waters of the melting snows and give them out gradually during the summer to the arid plains. Thus they help to irrigate the land. Moreover, their great economic value as a source of fur should alone be a sufficient argument in favor of protecting them.

— Adapted from *Compton's Pictured Encyclopedia*.[1]

1. Have you learned to define words by their context? Often the rest of the sentence will explain the new word in it.

2. Notice this example:

When the pale light of the summer sun melted the ice, Ibloe, the bravest hunter among the Eskimos, smoothed the skin sides of his *kayak* and paddled it away.

You know from the suggestions in the rest of the sentence that a *kayak* —

Is a boat. Is a small boat. Is a boat made of skins. Is an Eskimo boat. Is paddled, and not rowed or sailed.

3. In the same way try to explain these words.

haphazard superintendence insure currency

[1] Reprinted by courtesy of F. E. Compton and Company.

3. OLD AND NEW METHODS OF MAKING SHOES

We often need to read a selection rapidly, but we should never read so fast that we do not make an effort to get the meaning. Read this selection, therefore, rapidly but well.

Do not begin until you are told to do so by your teacher.

WE CAN hardly realize how the use of machinery has reduced the cost and labor of making a pair of shoes. In the early days of shoemaking, two men would work long hours for a day and a half to make one pair of coarse boots, at a labor cost of two dollars. But with the use of machinery the time has been reduced to four minutes for a similar pair, and the labor cost reduced to seventy cents.

In early colonial times, one man would do all the work on a pair of shoes, sitting on a bench with boxes which held the hammers, knives, awls, and other tools, as well as pegs, nails, thread, and wax. He also had his pot of glue and some blacking. In pleasant weather this bench was oftentimes placed just outside the door of his own house.

The first shoemaker in Massachusetts came in 1629, and brought his own supply of hides with him. Later the shoemakers went about from farm to farm making the home tanned skins into coarse shoes for the whole

family. Wooden lasts were whittled out to suit the feet in the family, and used for models for each new pair of shoes.

The children of the colony days were interested onlookers and knew just how their shoes were made. Today it is not so easy for us to know about shoemaking, as the shoes we wear may have been made many miles from our homes.

In our great-grandmother's day, some man of a village would do shoemaking on a little larger scale. In the evenings, the women of the household would help by binding the soles for the shoes and doing other light work on them.

Then came the small factories employing a few girls to run the new shoe machinery that had come into use. This machinery has been improved until we lead all other nations in the invention of shoe machinery.

Now we have big factories employing many thousands of men, women, and children to run this machinery, turning out so many shoes and of such good quality that they are used all over the world. In fact, our factories stand at the head in both quality and output. The number of shoes we make extends into hundreds of millions every year, and they include all kinds, from miners' hobnailed boots to little shoes for babies. Some factories make ten thousand pairs of shoes a day. If all the factories were kept busy, they would be capable of making enough shoes in a year to

give one third of all the human beings in the world one pair each.

It takes such quantities of leather to make all the shoes we produce that the animals reared on the farms of this country cannot supply it. One of the chief imports of the United States, therefore, is hides and skins.

4. MARCO POLO

This is the story of one of the most famous travelers of the Middle Ages. It is said that Columbus was influenced by this traveler's book, *The Travels of Marco Polo*, in his desire to find a way to reach China and India. Can you tell why?

UNDER great white clouds of sails, little ships, no larger than our ferryboats, rode in and out of Constantinople in the middle of the thirteenth century, carrying away rich cloths and bringing back spices and ivory, incense and precious stones. Tied at the wooden wharves, the vessels swarmed with swarthy sailors, dressed in bright-colored rags, quarreling and laughing as they carried the precious freight into the storehouses of Maffeo and Nicolo Polo.

Maffeo and Nicolo were brothers whose home had been in Venice. When they were boys they had floated about its street-canals and listened to the songs and laughter echoing among the brightly colored houses. Now they were men, and Nicolo was married. As they had grown older, dreams of strange lands and great wealth, dreams that had filled their boyhood, had lured them away from home. They had said good-by to their acquaintances. They had given a great farewell feast to their relatives and many close friends, for the Polos were nobles. They had talked much of the riches of far-away India and China and of how they

would return in a few years with untold wealth in silks and gold and precious stones. Then they had gone away to the bustling great city of Constantinople, and had started a trading company.

From the captains of the trading ships they heard stories of the marvelous countries in the far East. The brothers talked fast and long as they outlined the prospects of seeing strange yellow peoples, of learning new customs, and of opening trade with these countries. At last the desire to see new worlds and to grow rich became so strong that they arranged their business affairs, Nicolo said good-by to his wife, and they set off into Asia to make their fortunes.

For long years they traveled through what is now northern China, trading, making friends, applying the business methods of the great center of Constantinople to these far-away cities, and growing daily richer. At last they came to the palace of the Kublai Khan, probably in the city of Peking. There they were graciously received, for they were the first Europeans the Great Khan had seen. He asked them many questions about the people and customs in Turkey and in Rome, and was much interested in their stories. For ten years or more they traded in his cities. As they told him of Venice and Constantinople he became enthusiastic over European life. At last he gave them money and protection and sent them to the Pope to get one hundred teachers. These teachers

were to be brought back into Asia to instruct the Khan and his nobles in Christianity, European culture, and business.

When the Polos returned to Constantinople, they found that the Pope was dead and a successor had not yet been appointed. They went back to Venice to wait.

There they learned the sad news that the wife of Nicolo had died. She had left him a son, whom he had never seen and of whom he had never heard. The boy's name was Marco, and he was fifteen years old.

Over two years they waited and at last a new Pope was chosen. When they went to him to ask for the hundred learned men, he furnished only two. The two brothers and young Marco then set out to the East, accompanied by other traders and the two teachers. Before long the hardships became too great for the teachers and the other traders, and the Polos went on alone. They traveled down to the Persian Gulf, then up through Persia, and into the great desert of Gobi, to the great wall of China, which they crossed, and then went on into then unknown countries. Along the way they met many strange peoples, who had built up customs and civilizations of their own. Near the spring of 1275 they came to the summer palace of Kublai Khan at Shangtu.

The great ruler received them very kindly. He was disappointed to find they had brought no learned men, but was delighted with young Marco, then about

twenty-one. Marco was industrious and intelligent. He had worked hard and learned several of the languages used by the subjects of the Khan. The Great Khan soon saw that Marco was capable and clever, and gave him a position in the public service. This delighted his father and uncle, who found Marco's office a great aid in their business dealings. The young Marco noticed that Kublai Khan liked to hear the strange stories of the many Asiatic peoples and lands; therefore, he was very careful to remember and note down curious facts and stories that he thought would interest the Khan. As a result he became more and more popular, and was made governor for three years of the large and wealthy city of Yangchow.

In the meantime the three Polos had been gathering great wealth, and as Maffeo and Nicolo were getting old, they wanted to go back to Venice. The Khan, however, would not listen to their talk of departure. At last an opportunity came for their return. The Khan of Persia had chosen for his wife a subject of the Kublai Khan, the beautiful Kukachin, a seventeen-year-old girl of Peking. She had become acquainted with the Polos and had grown to like them exceedingly. When she was to be sent on the dangerous journey to Persia, through wild regions, among warlike tribes, and over dangerous oceans, she pleaded to have the Europeans accompany her. The Khan did not wish to consent, but at last fitted the bridal

party in great magnificence, gave many rich presents to the Polos, and bade them good-by. For two years they traveled, going most of the way by ship along the east and south coasts of Asia. When at last the Persian capital was reached, only one envoy from Kublai Khan, the three Polos, the girl, and a few attendants remained. The ruler of Persia who had sent for Kukachin was dead and his brother was on the throne. As was the strange custom then, this made little difference, and Kukachin was married to the son of the new ruler. Maffeo and Nicolo and Marco then went on to Constantinople and from there to Venice, having been away twenty-five years.

When they came to their old home, ragged and much changed, none of the surviving relatives knew them and no one would let them in. To prove that they were the three who had gone away to get great wealth, the poorly dressed travelers planned a great feast. The tables were spread with heaps of food and goblets of wine. The relatives gathered. But not one of the three had appeared. Then in they came, dressed in the richest of silks and satins, ornamented with amber and jade, diamonds and pearls. They came to the tables and gave great armfuls of beautiful silks to their kin. Then they went away and returned in the ragged clothes they had worn as they traveled, for fear of robbers. Taking knives from the tables they opened the linings of their coats and poured out heaps of pearls,

rubies, and diamonds. The relatives were then convinced. The wanderers were received into the homes of the great people of the city, and Marco never tired of telling his wonderful stories. These stories were so strange and the wealth he told of so great that people began to disbelieve him, and he was nicknamed, *Marco de Milliones*, or Marco the Million-air.

In a few years there was a war between Venice and Genoa. The Venetians prepared a great fleet, and Marco was made commander of one of the ships, but the Genoans were victorious and Marco Polo was captured and thrown in prison. While there he met another prisoner named Rusticiano, a writer. When Rusticiano heard Marco's stories, he urged the famous traveler to write them down. Marco at last consented to have them written and day after day he told of his experiences while Rusticiano wrote them into a book called *The Travels of Marco Polo.*

Soon Marco was freed from the prison and returned to Venice. He lived there, telling his stories, and at seventy he died, leaving his riches to charities and friends. Many years after, when other travelers and scientists investigated, the stories of Marco Polo that had often been laughed at were found to be nearly all true.

5. CAN YOU PLAY THIS GAME?

"Old Woman from the Wood" is a game that can be played in the schoolroom or on the playground. It is usually played by girls, but boys play it under another name, "Trades." If there are both boys and girls in the group, the two games may be combined. Read the rules and be ready to play the game.

FOR the game "Old Woman from the Wood," the players are divided into two equal groups. One party retires and plans what occupation to represent. This party then advances toward the other, saying, "Here comes an old woman from the wood."

The second party replies, "What can thee do?"

The old woman answers, "Do anything."

The second group then says, "Work away"; whereupon all the players in the first group proceed to imitate some occupation in which an old woman might engage; such as sewing, or knitting, or washing, or weeding in a garden, or kneading bread, or stirring cake. The other side tries to guess what the occupation is. If it guesses correctly, the second party goes out and decides upon some action. If it cannot guess correctly, the same side retires again. The time for guessing is limited to two minutes.

The boys' game of "Trades" is played in much the same way, but with occupations appropriate for men. The party choosing the action comes in saying a rime:

"Here are some men from Botany Bay.

"Got any work to give us to-day?"

The other side replies, "What can you do?"

The answer is, "Do anything."

The others then say, "Set to work, then." The actors may play the part of bricklayers, or horseshoers, or tailors, or cobblers, or motormen, or any other kind of workers. While the occupation is being acted out, the other side tries to guess what it is. The time for guessing is limited to two minutes. If the right guess is made before the time is up, the workers stay in and the guessers go out and choose an occupation to act. If not, the workers go out and agree on a new trade.

QUESTIONS

In order to test your knowledge of the game before playing it, write answers to the following.

1. Should all the acting party imitate the same trade or occupation?

2. If the guessers are not correct, does the acting party go out again to choose a trade or occupation?

3. Should the guessers try to discover the occupation before the acting begins?

4. Should the players who are to act the occupation begin to plan their choice before they retire from the room?

6. SEEING WORDS QUICKLY

We should read faster silently than aloud. Slow silent reading is sometimes due to our saying each word with our lips but without sound. Of course, that means that we can read no faster than we can make our lips move.

Fast readers see several words at a glance. This helps to get the meaning because words have to be grouped together to make the meaning. Such expressions as "down the street," "walked rapidly," and "once upon a time," should be seen with one pause of the eye.

The sentences in this exercise should give you some practice in seeing a sentence quickly and in getting its meaning at a glance. Do not look at the sentences below until the teacher tells you to do so. Follow her instructions carefully.

1. Close your book.
2. Close your left hand.
3. Put up your right hand.
4. Put your right hand on the book.
5. Put your left hand on the desk.
6. Shut your eyes while the teacher counts ten.
7. Look at page seven in this book.
8. Pick up your pencil and write the word *ball*.
9. Write the last word in sentence 4.
10. Close your book and put it in the desk.

7. THE WISE ELEPHANT

An important truth is illustrated in this old Chinese story. The title given to the story, however, does not suggest this truth. See if you can think of a title that does.

SIX HUNDRED years ago the people of southern China trained elephants and taught them to do many useful things. The elephants worked for farmers and woodcutters, and helped make the roads twice a year; for an elephant could do many times more work than any other animal. So wise were the elephants that the people grew superstitious about them, believing they could see even into the heart of man.

A judge named Ko Kio Yong had an elephant that was trained to do this wonderful thing, so it was said. Three cases which were brought before him were decided by this wise old elephant which the judge owned. This is the way one of the decisions was made.

A man came before the judge and said that some robbers had been in his house during the night and had taken his gold and jewels — all that he and his wife had; and he asked the judge to find and punish the thieves.

In three months, five suspected men had been found. When they were brought to the judge, they bowed before him, and each one said, "I have never stolen."

The man and woman who had been robbed were called. The woman said, "That man with the long gray hair is the one who robbed us."

The judge asked: "Are you sure it is he? How do you know?"

She answered: "Yes, I remember. He took the bracelet from my arm, and I looked into his face."

"Did the other four rob you also?" asked the judge.

The woman answered, "I do not know."

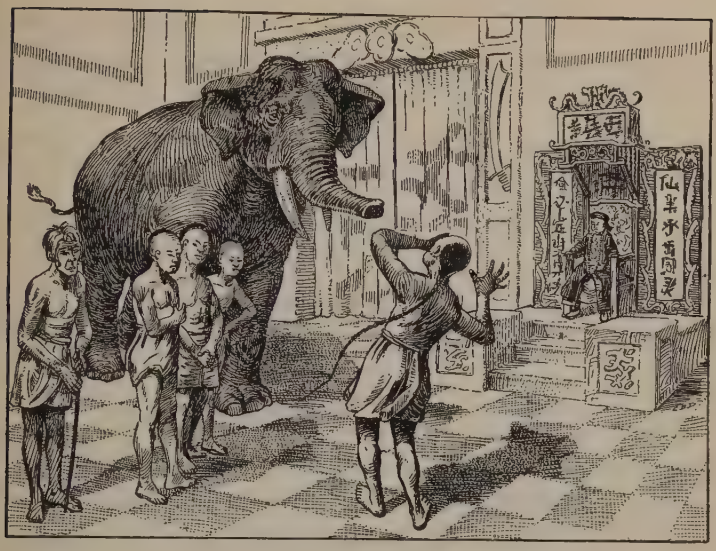
The judge said: "The man you say is a robber seems not like one to me. His face is kind and gentle. I cannot decide according to your testimony. I know of but one way to find out, and we shall soon know the truth in this matter. My elephant shall be brought in to examine the men. He can read the mind and heart of man; and those who are not guilty need have no fear, for he will surely know the one who has done this deed."

Four of the men looked glad.

They were stripped and stood naked — all but the cloth — before the judge and the law of the nation, and the elephant was brought in.

Then the judge said to the elephant, "Examine these men and tell us which is the robber." The elephant touched with his trunk each of the five accused men, from his head to his feet.

The gray-haired man and three of the others stood still and laughed at the elephant with happy faces; for they knew in their hearts they were not



THE ELEPHANT AND THE ROBBER

guilty, and they thought the elephant knew. But the fifth man shivered with fear, and his face changed to many colors. While the elephant was examining him, the judge said, "Do your duty," and rapped loudly. The elephant took the guilty man and threw him down on the floor, dead.

Then the judge said to the four guiltless men, "You may go." And to the woman he said, "Be careful whom you accuse." Then he said to the elephant: "Food and water are waiting for you. I hope you may live a long time, and help me to judge wisely."

After this many wise men who were not superstitious went to the judge and said:

"We know that your elephant cannot read the heart and mind of man. What kind of food do you give him, and what do you teach him? How can an elephant read the heart of man, a thing which man, himself, cannot do? Did the spirit of a dead man grow wise and enter that elephant? We pray that you explain."

And Ko Kio Yong, the wise judge, laughed and said:

"My elephant eats and drinks as other elephants do. I think he surely does not know a robber from an honest man, but this is a belief among our people. The honest man believes it and has no fear, because he has done no wrong. The thief believes it, and is filled with terror. Trial before the elephant is only confession through fear."

— From *Chinese Fables and Folk Stories*, by Mary Hayes Davis and Chow-Leung.[1]

1. Write your guesses at the meanings of these words from their context:

superstitious testimony accused

2. Compare your guesses with the dictionary definitions.

[1] Copyright, 1908, by American Book Company.

8. FLORENCE NIGHTINGALE, NURSE

When we are very sick, it is almost as important to have a trained nurse as to have a doctor. We welcome her presence in our homes. The white costume means a better chance for sick fathers, mothers, sisters, or brothers to be well again. In school, too, the nurse helps to keep us from being sick at all.

Once there were no trained nurses. Then illness was far worse than it is for us. Often people were forced to suffer because they had no care at all.

Do you not think that the person who helped most to change all this is worth knowing about?

Before reading the story of Florence Nightingale, who began the training of nurses, make a list of the questions you would like to ask about a woman who has done so much for the world.

FLORENCE NIGHTINGALE was born in Florence, Italy, in 1820. She was the daughter of an English landowner, who lived on a picturesque estate in Derbyshire. He gave her the best education she could secure from books, school, and travel. As a little girl she showed great interest in the poor and sick, and was kind to animals. Even the squirrels on the lawn made friends with her. Often as she sat at her father's table with all the good things to eat and the beautiful silver, glass, and china before her, she would think of the poor and the sick who were without even an orange to quench the thirst of fever. Frequently she drove with her father's physician into the country, taking baskets filled with dainties, often even denying herself

something that she might share with others. Everybody was happy to have her enter the sick-room, for her unselfish and helpful nature made her a tender nurse.

Until then, nurses had no special training for their work. Few realized that nursing had to be learned, that it required intelligence, knowledge, and skill, as well as sympathy and love. But the devotion of Florence Nightingale changed all this. She was an accomplished young lady, and had abundant wealth. She was happy at home, a general favorite, and the center of an admiring circle. She was favored with everything that might have made social and domestic life attractive to most young women. But she turned her back on her gay world to tread a path that led through suffering and sorrow, and she went to Germany to learn to be a nurse. Her training began with the simple, rough tasks. She learned the use of the washing cloth, the scrubbing brush, and the dust cloth. For three months she was in daily and nightly attendance on the sick in the German hospital.

Returning to England she gave her time, strength, and means to nursing her sisters in the Hospital for Sick Governesses in London. Here her health began to fail, and she returned to Derbyshire to seek the needed rest in her father's home of wealth. But a new cry arose for help. The Crimean war raged. There was a great want of skilled nurses to relieve the dreadful sufferings of the wounded soldiers who were lying

in the hospitals. She at once offered her services to her country, and was sent, with thirty-four other women nurses, reaching Russia on the day of the fearful battle of Inkerman. The hospitals were filled with sick and wounded soldiers — four thousand suffering from cholera and other horrors that war brings. Miss Nightingale met the wounded and dying with smiles and words of cheer. Many of the sick wept for joy at the first touch of a woman's hand they had felt for years. She seemed to be everywhere, superintending the washing of their clothing and beds, cooking their food, assisting the chaplain with his school, furnishing books for the soldiers to read, writing their letters, saving their money, or sending it to their relatives at home. How the soldiers loved her! Many of them whom she could not personally tend kissed her very shadow as it fell on their pillows, as she passed at night. They called her "the Lady of the Lamp."

FLORENCE NIGHTINGALE

Returning to England at the close of the war, she was invited to Balmoral Castle by Queen Victoria, who gave her a beautiful jewel, an emblem of her work, with the inscription, "Blessed are the Merciful," engraved on one side, surmounted by a crown of diamonds. The English Government gave her two hundred and fifty thousand dollars, which she used in founding the Nightingale School of Nurses in London. The English soldiers wanted to erect a statue of her in London, and each promised to give one penny for it, thinking she could not object to a gift so small from each grateful giver; but she refused to let them do it, telling them that it would please her more if they would give the money to the hospitals. She left a record of unselfish devotion to duty which has enriched the world. She died in 1910, full of years and honors.

— Adapted from *World Stories Retold*, by W. J. Sly.[1]

[1] Used by permission of The Judson Press, owners of copyright.

9. ARTIFICIAL STONE

This is a selection that will give you practice in learning to read rapidly. Remember, however, that it is more important to get the facts than to read fast.

Wait for your teacher's directions before you begin.

NATURE is a wonderful workman. The stones that we use in building were made by nature working for thousands of years. Our sandstone consists of grains of sand that have become glued or cemented together and changed by pressure into rock.

It takes so much labor to cut stone into the sizes and shapes desired for building that man began early to look about for something that would take its place. Wood has always been used in large quantities, but it is not so lasting as stone and not strong enough for large buildings. Man found one substitute in clay out of which he made bricks, burning them so that they became as hard as stone. Another substitute is concrete, which is really an artificial stone made by man.

Concrete is not a recent invention. Four thousand years ago the Egyptians made concrete that has lasted for centuries. The Greeks also used it and the Romans made walls, roads, and monuments of it which still stand. It is formed by mixing sand, small stones, and water with cement. As it dries and hardens the

cement binds the entire mass together as strongly as nature binds the grains of sand in the sandstone.

In our country this cement is generally called Portland cement, and its manufacture is now one of our largest industries. Stone containing the proper mixture of limestone and clay is ground fine by machinery. It is heated very hot to bring about chemical changes and then cooled. In a mill it is ground to a very fine powder. Then it is put up in bags or barrels to be shipped all over the country.

You have probably seen workmen making concrete. They mix cement with sand and broken stones and pour water over it. The entire mass is then turned over and over by machinery until every grain of the sand and every bit of stone are well covered with the cement. The whole is then poured into molds made of wood and when it hardens it has all the qualities of stone made by nature. It is, in fact, artificial stone.

Scarcely a building is erected to-day without the use of concrete in some form. It is extensively used for foundations and for the support of bridges because it will harden to stone under water. We are now learning that concrete makes the smoothest and most durable automobile roads, and hundreds of miles of such roads are being built everywhere. Cement is now in such demand that millions of barrels are sold annually, and its use is rapidly increasing from year to year.

10. READING ARITHMETIC PROBLEMS

Reading an arithmetic example carefully is the first step toward finding the right answer. It is of no use to begin figuring until you know what you have to work with and what to do with it.

Write the numbers from 1 to 10 in a column on a sheet of paper. Read each example. After the number of the example write what you should do — add, subtract, divide, or multiply. If you should do two things, write them both in the proper order. Do not actually do the work.

After all of you have finished, discuss together the words which were most useful in telling you what to do in each example.

1. A man rents his house for $950. But he has to pay $224.90 for taxes, repairs, and other expenses. What is his net income from the house?

2. A recipe for a cake calls for 7 ounces of sugar. If we wish to make the cake $3\frac{1}{2}$ times larger, how much sugar shall we use?

3. There are 76 pupils in the fourth grade, and 89 in the fifth. How many more are there in the fifth grade than in the fourth?

4. John planted peanuts in his garden, 12 rows of 16 hills each. How many hills did he have?

5. How many miles of iron rails will it take to lay 54 miles of car track?

6. Ned lives 15 blocks east of the school, and Frank, 17 blocks west of it. How many blocks apart are their houses?

7. Two towns are directly north of Boston, one 63 miles, and the other 48 miles. How far apart are they?

8. I have 21 marbles. If I give my brother a dozen, and lose half a dozen, how many shall I have left?

9. A man paid $4.75 for a box of oranges. There are 95 oranges in the box. If he sells each orange for five cents, will he make a profit?

10. Sixteen hens laid 2816 eggs in a year. What was the average number from each hen?

11. If my automobile will run 12 miles on a gallon of gasoline, how much gasoline shall I need for a trip of 150 miles?

12. A train that usually arrives at half-past nine was 15 minutes late. When did it arrive?

13. The suits for a football eleven cost $7 each, and the shoes $4 a pair. What was the entire cost of suits and shoes for the team?

15. Fred's father is 38 years old. If he lives, in how many years will he have his fiftieth birthday?

11. THE BANANA

One of the things we have to learn is how to get information to answer questions. Books which answer many questions are called books of reference or encyclopedias. If we learn to use these well, we can be independent in answering questions and learn many interesting facts.

You know how a banana tastes, but you may not know much else about it. This selection about the banana is taken from an encyclopedia. Usually in consulting an encyclopedia you should know what questions you wish answered. So now you should first ask yourself what you would like to know about bananas. Make your list of questions on a sheet of paper. Compare yours with other lists made by the class. Select the best questions. Then read the selection to get the answers. If you do not find all you wish to know, look in other books. You may find interesting things about which you did not ask.

Books of reference often contain unfamiliar words. When you come to such a word, first try to get its meaning by studying carefully the sentence in which it is found. If you cannot guess its meaning, then consult the dictionary or your teacher. See if you can guess the meaning of these words which you will find in this selection.

relished era commodities nutritious

BANANA is the name borne by a tropical fruit which is now relished the world over, though scarcely known as late as 1870. To say that the great, heavy bunches of bananas which are so familiar a sight in the markets do not grow on trees, but upon herbs, sounds at first absurd and impossible. It is, however,

the truth; but in the tropics herbs grow to such great size that they would not be recognized as such by people of temperate regions.

How It Grows. The banana has an underground stem which sends up suckers or sprouts that attain their full growth in a year and a half or two years. Its trunk is not really a trunk at all, but a false stalk formed by the curled bases of the leaves, which wrap themselves about the flower stem. This stalk, almost a foot in diameter at the bottom, rises to a height of from ten to forty feet, its great leaves, a foot or two in width and from six to ten feet in length, drooping outward. When the plant has reached its full growth there appears a huge flower bud, which opens and shows a bunch of little purple flowers, each of which makes way for a tiny banana. The great flower cluster hangs toward the earth, but as the separate fruits begin to grow they turn upward. From 50 to 150 bananas, weighing all together from 40 to 100 pounds, may grow in a bunch, and their outer ends point upward. In a store bananas are hung bottom side up.

The Banana Industry. The banana thrives in a hot, moist climate, and is raised in the tropical regions of both the Eastern and the Western hemispheres. In the Americas it grows on most of the West India islands and along the coasts of the Gulf of Mexico and the Caribbean Sea, from Vera Cruz to the mouths of the Amazon River. California, Florida, and Louisiana

produce a small crop. The greatest banana section in the world is in Central America, although there are single groves in Colombia containing 100,000 acres.

Bananas are imported in great quantities by the countries of Europe and temperate North America. The people of the United States and Canada alone consume about 50,000,000 bunches of the fruit each year, but the development of the American industry is comparatively of recent date. In the year 1866 a small cargo of bananas, raised on plantations in northwestern Colombia, near the present Panama Canal Zone, was delivered at the port of New York. This was the beginning of the banana industry in the United States and Canada. In the early days of the industry the individual fruits sold for about ten cents each, or fifty cents a half dozen. It is a remarkable fact that the banana has maintained its present reasonable price of from ten to twenty-five cents per dozen throughout the era of high food values. It is one of the few commodities in common use for which the consumer has not had to pay double and treble the price demanded a few years ago. This is due to the scientific methods of production and marketing adopted by the companies which handle the trade.

Uses. For the most part the fruit is the only portion of the banana plant used, and the leaves and stalks, which must be cut down after the fruit has matured, are thrown away. Some species, however, produce

a useful fiber, and the leaves of certain kinds are used for roofing houses and making mats, bags, and baskets.

Food Value. The uncooked banana is most wholesome and nutritious when the peel is of a yellow-brown color. The fruit is brought to northern markets green and is ripened artificially. An unripe banana contains a large proportion of starch, which changes into sugar in the process of ripening. An uncooked green banana is as hard to digest as a raw potato. When cooked, however, the fruit becomes readily digestible, and many delicious dishes are prepared by the natives in banana countries by baking the green fruit in hot ashes. In countries which depend upon importations, cooked bananas are also finding favor; unripe bananas are fried, made into croquettes or fritters, cooked with ham or bacon, and prepared in other ways. Banana flour, which is a common article of diet in the tropics, is coming elsewhere into use. It is made by grinding the dried, unripened fruit. One pound of banana flour is equal in nourishment to two pounds of wheat flour.

— From *The World Book*.[1]

[1] Reprinted by courtesy of W. F. Quarrie and Company.

12. THE MEANING OF COMMON WORDS

The person who understands words in their exact meaning has a great advantage in reading and speaking. String and thread are somewhat alike, but you would not ask for thread to tie up a large bundle. Suppose you read in a story, "The dog gamboled about his master." This would not mean much unless you knew that *gambol* means *to jump about playfully.* This lesson is planned to help you to get the habit of looking carefully at words, even though you recognize them, to get the exact meaning. Perhaps you will also learn some new words.

Each sentence in this exercise needs one of the words in the parentheses to complete the meaning. Only one word in each case really makes good sense. Put the number of the sentence on a sheet of paper, and after the number write the word which makes the best sense in that sentence. When you have finished all the sentences, look them over again in order to explain your choice to the rest of the class.

This is an example:

Lincoln was a great (*foreigner*, *author*, *citizen*, *outcast*) of the United States.

It is clear that *citizen* fits the meaning better than any other word given. In the same way choose the words that best fit the meanings in the following sentences.

1. The (*wind*, *waves*, *compass*) told us that we were sailing exactly north.

2. The savages showed by their actions that we had nothing to fear from their (*condition*, *capers*, *conduct*).

3. The Indians held a solemn (*dispute*, *council*, *display*, *operation*) and decided to burn the prisoner.

4. When Andrew had killed the fox, he was so (*elated*, *influenced*, *wearied*, *disheartened*) that he hastened home to tell his father.

5. The deeds of Hercules were so great that his (*goodness*, *notoriety*, *fame*, *worship*) has lived ever since.

6. The oyster sometimes contains a (*cherished*, *immortal*, *precious*) stone called a pearl.

7. He was willing to risk the (*sale*, *sacrifice*, *exchange*, *substitution*) of his life in carrying the message.

8. The salesman said that his company had a high (*idea*, *intention*, *standard*) in making its automobiles.

9. This building belongs to me alone as I am the (*former*, *sole*, *indirect*, *personal*) owner of this whole property.

10. The (*volume*, *sack*, *barrel*, *contents*) lay open on the desk as he read to the class.

11. All indulged in a (*vigorous*, *hearty*, *strong*, *powerful*) laugh when he finished his story.

13. FIGHTING ICE WITH ICE

Here is the account of a thrilling experience. You will wish to read it as rapidly as possible to find out what happened. Why is "Fighting Ice with Ice" a good title?

There are a few words that you may not know. If you do not guess their meaning at first, read on to the end, provided you get the main idea of the story. After you have finished reading, go back to these words, and see if you can study out their meaning.

consecutive expanse saturated hampered divest

IT is not often that the water of Tappan Sea, the wide part of the Hudson River between Tarrytown and Nyack, freezes over solid enough so that people can cross safely on the ice. Unless there is a considerable period of colder weather than is usual in the lower Hudson Valley, the current and the tide keep a lane of water open in the channel or form rifts in the ice that make crossing dangerous.

One winter, close on the heels of a period of cold weather during which ice had formed across the bay, except in the channel, there came five consecutive days of zero temperature — an unusual occurrence. It was reported round Tarrytown that the crossing was safe, and the weekly papers appeared on Friday with stories about pedestrians and teams making the trip from town to town on the ice. Warner Bell decided that he would walk across to Nyack Sunday afternoon and visit a friend.

The weather moderated Saturday, and an inch of light snow fell; but Sunday it was clear, although not so cold as it had been. Still, it was well below freezing. Warner dressed warmly for his walk. He put on high overshoes, a long, extra-heavy ulster, a woolen muffler, a cap that protected his ears, and fleece-lined gloves.

Warner was not alone in crossing, for people were straggling all along the river. He followed a well-defined path in the snow and was able to walk rapidly, for the ice was rough under the snow for most of the way. He met with a cordial welcome at his friend's house, and was so pleasantly entertained that he accepted an invitation to stay to supper. Consequently, it was nearly ten o'clock when he started for home.

As soon as he left his friend's house Warner regretted that he had stayed so late, for a strong northwest wind had sprung up during the evening. After he had

advanced a short way from the shore, he found that the wind, whipping the light snow in long, wavering streams across the ice, had wiped out the track. For a moment he hesitated, then he set forward briskly.

There was a bright moon, and Warner could see that he was alone in the broad expanse of snow-covered ice. No one else, he thought, would be so foolish as to be out there at that time of night. He felt lonely and reflected that from either shore he would appear only as a small black dot in the white expanse. But he kept on, sometimes half running in the face of the wind and sometimes slowing down to steady himself against a fierce blast. He muffled his face until little except his eyes were exposed, and those he fastened on the winking light of the little lighthouse at the northern end of the Tarrytown Bay.

Thus he was hurrying along, paying little attention to the footing, when he struck a patch of ice that was glassy smooth beneath its thin covering of snow. His feet shot from under him, and he fell heavily. Even as he did so, there was the crash of breaking ice, and he was fighting desperately in freezing black water.

Instinctively he pushed down again and again with his arms, but each time the ice broke under his weight. Then at last it held, and he found himself at one side of a pool of water, clinging to ice more than a foot thick.

The explanation of his accident flashed through his

mind as he perceived the thickness of the ice that supported him. He had stepped on thin ice over a rift that had probably formed in the solid ice the night before. The track by which all the people had crossed safely had passed far enough to the north to avoid the dangerous ice bridge.

Gasping and blowing from his freezing plunge, and with his heart pounding painfully, Warner clung motionless for an instant to the solid ice. It was an instant only, however, before he began the struggle to lift himself out, for he knew that the icy water would numb him into helplessness in a few minutes. But as soon as he made the effort he saw how difficult, perhaps impossible, it would be to save himself.

He was weighed down as if he were clad in a suit of lead. His heavy ulster, reaching well below his knees, was saturated with water and pulled him down with disheartening force every time he tried to lift himself. Moreover, it hampered his movement so that he could not use his arms freely or swing his legs sidewise and up on the ice. He dared not let go sufficiently to divest himself of the ulster; he could not even unbutton it all the way down. All that he could do was to push himself straight up and then throw himself forward in an effort to drag himself out on the glassy surface.

Against him also was the condition of the ice. The surface was treacherously slippery, and he could get no hold upon it whatever. Worse than that, the face

of the ice was perpendicular only about halfway down, and then slanted sharply toward him.

Again and again Warner exerted all his strength to raise and drag himself forward on the ice, but each time he slipped back as his hands slid helplessly on the slippery surface. Already the wet upper part of his ulster was freezing stiff. The icy water was rapidly taking his strength; and, although he forced himself to tread water as vigorously as he could to keep his blood circulating, he felt himself growing dull and numb.

As he slipped back after another vain effort, he glanced desperately about him. In his overweighted and exhausted condition he dared not let go and try to reach the opposite side of the pool where the ice might be more favorable. From the width of the rift he knew that the thin ice to the north and the south must extend for many yards before the thick ice came together, and he could not hope to last long enough to break his way through it. There was no hope of help; he was all alone in that desolate, wind-swept field of ice. There was not one chance in a million that any one would cross the river before he would have to let go. The Tarrytown shore was nearly a mile away, and it was useless to shout, even if there had been any one there to hear.

Warner was not ready to give up yet, but he realized that there was little hope of his doing now what he could not accomplish before the icy water had stolen the

energy from his muscles. Nevertheless, he gathered himself for another effort. As he did so he found that one of his sleeves that had remained motionless for a moment on the ice had frozen to it slightly. He stared at it stupidly while an idea struggled in his dulling brain. Then his already sluggish pulse began to beat faster and stronger.

Supporting himself with one arm, he tugged at his muffler until he pulled it from under his coat. Then he grasped the broad strip of water-soaked wool by the middle, and slapped the two ends out together on the ice in front of him, retaining his hold on the middle. He smoothed out the ends as well as he could and splashed water over them.

Almost instantly the muffler froze fast to the ice, and as the water he splashed up congealed, the ends became solidly embedded. With both hands Warner grasped the loop formed by the bend of the muffler in the middle and waited. Too much haste would bring disaster.

"Now!" he muttered, and, summoning all the energy he had left, he thrust himself up and pulled himself forward by the muffler. It ripped near the loop, but the ends held, and he was able to draw himself forward on the ice until he could get his knees on the surface.

He stumbled to his feet at once and concentrated all his will power on forcing himself to run. Stagger-

ing, often falling, and with his frozen ulster banging about his knees, he made for the Tarrytown lights.

Twenty minutes later the night agent at the Tarrytown railway station, looking through the telegrapher's window, was startled to see a man come stumbling across the tracks from the river and then to see the ice-coated figure enter the waiting room and fall by the hissing steam radiator. Fortunately, the agent was quick-witted enough to telephone at once for a doctor. Then he stripped off Warner's frozen clothing as fast as he could and wrapped him in his own warm, dry coat.

— Gorton Veeder Carruth in *The Youth's Companion*.[1]

[1] Reprinted with permission.

14. ONE OF AMERICA'S GREATEST CONQUERORS

As you read this story of one of our great Americans, try to find the main idea by giving answers to these questions:

1. How was General Gorgas able to save so many lives?
2. Why is he called a conqueror?

IT is a great thing to uphold the honor of one's country on the battlefield. But there are conquests even greater than those over hostile armies — such are the conquests over the forces of disease and death and the suffering of little children. And so we may truly say that one of the greatest conquerors that America ever produced, a man worthy to rank with Washington or Grant or Pershing, was William Crawford Gorgas, an army medical officer. He conquered malaria and the deadly yellow fever in Cuba and the Panama Canal Zone, and thus made possible the construction of the Panama Canal. At his death, at the age of 66, he was the world's foremost sanitarian.

The family of Gorgas was well known in Alabama, where the boy was born shortly before the Civil War. His father was a general in the Confederate army and the collapse of the Southern cause brought the family a full share of hardships. "I first came to Baltimore," said the son, "about 45 years ago — a ragged, barefoot little rebel, with empty pockets and still more empty

stomach. My father had gone south with Lee's army. At the fall of Richmond, my mother's house with all that she had was burned, leaving her stranded with six small children. She came to Baltimore and was cared for by friends. These memories are vivid with me, and can never be effaced."

Young Gorgas received his education at the University of the South at Sewanee, Tennessee, of which his father had become president. After graduating from Bellevue Medical College, New York, he entered the United States Army as a surgeon; and while stationed at Fort Brown, Texas, had his interest first aroused in the terrible scourge — yellow fever — which he was later to do so much to combat and conquer.

After the Spanish-American War, Doctor Gorgas served as chief sanitary officer of Havana, Cuba, which was notorious as a center of yellow fever. There he won his first world fame by ridding the city almost entirely of this plague. He was practically the first to apply the new discoveries — that both malaria and yellow fever can be spread only by the bites of certain species of mosquitoes, which in turn have become infected by biting persons infected with these diseases.

In reward for his work at Havana, Doctor Gorgas was created colonel by special act of Congress, and shortly afterward was appointed as chief sanitary officer of the proposed Panama Canal.

Colonel Gorgas and his men destroyed the homes of mosquitoes during the larval stage within a hundred yards of all human dwellings; they destroyed all protection for adult mosquitoes; they screened all houses with wire screens; and they destroyed all breeding-places, either by draining stagnant waters or sealing them with crude petroleum, which spreads a film over the surface and kills the larvæ.

Never was there known so great a "pouring of oil upon troubled waters"; never was there known so silent a battle between an army of hundreds on one side and hundreds of millions on the other. On one side were a few hundred men — doctors and ditchers, drainers and dispensers, oilers and clerks, and sanitary inspectors — guarding 40,000 or 50,000 laborers and their families, scattered over 450 square miles in about 40 camps and villages. They were doing the biggest piece of engineering that has ever been done on the earth, digging a way from sea to sea, cutting up a mountain for the sea to pass through, and building huge walls to hold in the sea as it passed. On the other side were millions of mosquitoes born in stagnant waters, but emerging with their powers of death to fly through every door and window to suck the blood of any human being and poison the life-blood of all Panama, as their ancestors had poisoned it for ages, with yellow fever and malaria.

Without the remarkable work of Colonel Gorgas in

stamping out these diseases, the canal might never have been completed, certainly not without appalling loss of life. It has been estimated that in the ten years that the canal was in building he saved more than 70,000 lives, and $80,000,000. His achievement marked an epoch in the history of sanitation, and in the work of making the tropics habitable for the white man. It was not too much now to expect, as Colonel Gorgas prophesied, that "some day a case of yellow fever will be regarded as a medical curiosity."

At the completion of the canal, in 1914, Colonel Gorgas was promoted by his government to be Surgeon-General of the United States Army, and next year was given the rank of major-general.

He had already, at the request of the British government, visited South Africa, to help check the plague of pneumonia from which thousands of negroes in the mines were dying. After his retirement from the army, in 1918, he was asked again to visit Africa to investigate sanitary conditions in West Africa; but he died in London before this work was finished. General Gorgas had received high honors of all sorts during his life, and after his death the British government took official charge of his funeral in St. Paul's Cathedral, London.

— From *Compton's Pictured Encyclopedia*.[1]

[1] Reprinted by courtesy of F. E. Compton and Company.

15. SHEEP

It is important to learn to read rapidly, but it is more important to learn to read well. A pupil, however, who can read both rapidly and well has the most important tool that the school can give.

Wait for your teacher's suggestions before you begin to read.

RAISING sheep is a very old industry. They were raised in Asia and in Europe ages before Columbus discovered America, and he brought some to Haiti on his second voyage to America in 1493. Later the Spaniards brought sheep to Mexico and other colonies.

The Mexican sheep were the ancestors of many of the sheep of our country, especially in New Mexico and California. They multiplied rapidly, and more than a hundred years ago the mission stations of California had more than a million sheep.

The sheep that were introduced into Virginia from England in 1609 seem to have been less fortunate than those of Mexico and the West. They increased very slowly, as there were then many wolves in that region, and wolves have been the great enemy of sheep from early times.

The sheep that were brought to New York from Holland, and to New England from Spain and Great Britain, seem to have been more carefully protected. They increased to large numbers. Many sheep were

taken to the Northwest as that part of the country began to be settled by New Englanders.

The West is now the home of the sheep-raising industry. Some are found in the corn-growing Central States, and some are on the high, dry lands of the Plateau States. On these highlands, sheep are pastured out of doors even through the winter months. The grass there is cured by the sun as it stands, and in winter is like hay.

These sheep are carefully watched by shepherds who live in wagons. One man with his dogs can usually take care of three thousand sheep and keep them from straying. The sheep are shipped from these flocks to the meat-packing houses, first being left in the corn belt for a time for fattening.

Texas has become our greatest sheep-raising state. It has about three million sheep. New Mexico, California, Utah, Wyoming, Idaho, and Montana have each two million sheep or more.

With these large numbers of sheep in our country one would think that we could export some of the mutton that we produce to those countries who first sent us our sheep. This we are unable to do, as we have only enough meat from all these sheep and lambs for our own tables.

Many sheep are slaughtered at Chicago, as well as other great packing centers, where the meat is put into cold storage cars and sent all over the country. Some

also are killed by local butchers, which aids in making lamb one of the chief meats of our diet.

We must not overlook the fact that sheep not only furnish us with food, but also with the wool from which much of our clothing is made. Wool is one of the most important of woven materials. As it is easily spun into thread and makes comfortable clothing, it was much used by the people of ancient times.

16. ROBERT LOCKWOOD'S FATE

You will wish to read this exciting story of an incident in the Revolutionary War as quickly as possible to find out what happened. A good fifth-grade reader should finish it in about four minutes. Time yourself.

IN the winter of 1779, General Putnam was stationed at Redding, Connecticut, with a band of ill-fed, unpaid troops. He was quartered at the Marvin house, and Mary, daughter of farmer Marvin, won her way to the heart of this rough soldier through the excellence of her dumplings and the invigorating quality of her flip. He even took her into his confidence; and, being in want of a spy in an emergency, he playfully asked her if she knew any brave fellow who could be trusted to take a false message into the British lines that would avert an impending attack. Yes, she knew such a one, and would guarantee that he would take the message if the fortunes of the colonial army would be helped thereby. Putnam assured her that it would aid the patriot cause, and, besides, that he would reward her; whereat, with a smile and a twinkling eye, the girl received the missive and left the room.

When daylight had left the sky, Mary slipped out of the house, crossed a pasture, entered a ravine, and

in a field beyond reached a cattle shelter. On the instant a tall form stepped from the shadows, and she sank into its embrace. There was a kiss, a moment of whispered talk, and the girl hurriedly asked her lover if he would carry a letter to the British headquarters, near Ridgefield. Of course he would. But he must not read it, and he must on no account say from whom he had it. The young man consented without a question — that she required it was sufficient; so, thrusting the tiny paper into his hand and bidding him God-speed, she gave him another kiss and they parted — he to go on his errand, she to pass the night with the clergyman's daughter at the parsonage.

At about ten o'clock Putnam was disturbed by the tramping of feet and a tall, good-looking fellow was thrust into his room by a couple of soldiers. The captive had been found inside the lines, they said, in consultation with some unknown person who had escaped the eye of the sentry in the darkness. When captured he had put a piece of paper into his mouth and swallowed it. He gave the name of Robert Lockwood, and when Putnam demanded to know what he had been doing near the camp without a permit, he said that he was bound by a promise not to tell.

"Are you a patriot?" asked the general.

"I am a royalist. I do not sympathize with rebellion. I have been a man of peace in this war."

Putnam strode about the room, giving vent to his

passion in language neither choice nor gentle, for he had been much troubled by spies and informers since he had been there. Then, stopping, he said:

"Some one was with you to-night — some of my men. Tell me that traitor's name and I'll spare your life and hang him before the whole army."

The prisoner turned pale and dropped his head. He would not violate his promise.

"You are a British spy, and I'll hang you at sunrise!" roared Putnam.

In vain the young man pleaded for time to appeal to Washington. He was not a spy, he insisted, and it would be found, perhaps too late, that a terrible mistake had been committed. His words were unheeded. He was led away and bound, and as the sun was rising on the next morning the death sentence was executed upon him.

At noon Mary returned from the parsonage, her eyes dancing and her mouth dimpling with smiles. Going to Putnam, she said, with a dash of sauciness, "I have succeeded, general. I found a lad last night to take your message. I had to meet him alone, for he is a Tory; so he cannot enter this camp. The poor fellow had no idea that he was doing a service for the rebels, for he did not know what was in the letter, and I bound him not to tell who gave it to him. You see, I punished him for abiding by the king."

The general laughed and gazed at her admiringly.

"You're a brave girl," he said, "and I suppose you've come for your reward. Well, what is it to be?"

"I want a pass for Robert Lockwood. He is the royalist I spoke of, but he will not betray you, for he is not a soldier; and — his visits make me very happy."

"The spy you hanged this morning," whispered an aide in Putnam's ear. "Give her the pass and say nothing of what has happened."

The general started, changed color, and paused; then he signed the order with a dash, placed it in the girl's hand, gravely kissed her; watched her as she ran lightly from the house, and going to his bedroom closed the door and remained alone for an hour. From that time he never spoke of the affair, but when his troops were ordered away, soon after, he almost blenched as he gave good-by to Mary Marvin, and met her sad, reproachful look, though to his last day he never learned whether or not she had discovered Robert Lockwood's fate.

— From *Myths and Legends of Our Own Land*, by Charles M. Skinner.[1]

[1] Reprinted by permission of J. B. Lippincott Company, publishers.

17. A WRESTLING GAME

There are many kinds of wrestling. The kind described below is called "Balance Wrestle." It may be played to advantage in the schoolroom. Only two players are needed.

Read the rules carefully and then test your knowledge of the rules by answering the questions which follow. Then choose two boys to try the game. Choose a member of the class who knows the rules well to umpire and keep score. The rest of the class while looking on should be ready to report to the umpire any violations of the rules. Two girls may play the game also.

Two players stand facing each other, each right foot forward so that the great toe of the right foot of one is beside the great toe of his opponent's right foot. The right feet should be along a line or a crack in the floor. The left foot should be some little distance back of the right foot at right angles to the same line, with the heel touching it. The players then grasp right hands.

The objects of the game are to make the opponent (1) move one or both feet, or (2) touch the floor with any other part of the body. A point is scored for a player whenever his opponent moves his foot or touches the floor with any other part of his body. After the trial has been made with the right hand and foot, the wrestle should be repeated with the left hand and foot, and so on alternately. The free hand must not touch

the opponent. If it does, a point is scored for the opponent.

QUESTIONS

Put the right answer on a sheet of paper after the number of the question.

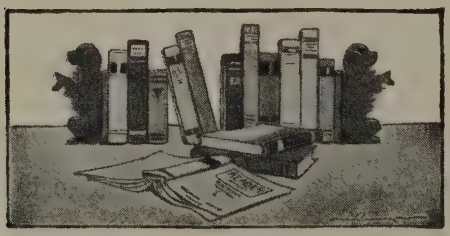
1. While wrestling with the right hands clasped, one player moves his left foot. Does this score one for his opponent?

2. A player pushes his opponent with his free hand. Is this allowed according to the rules?

3. A player touches his free hand to the ground, but does not move his feet. Does this score one for his opponent?

4. The players' right hands slip apart. Does this score for either?

5. A player puts his free hand on his own knee. Does this score for his opponent?



18. MESSENGERS WITH WINGS

You may find out here about pigeons, and especially about how carrier pigeons were used in the World War. Read as rapidly as you can, and then try to answer these questions:

1. Why have passenger pigeons disappeared?
2. How were the carrier pigeons trained?
3. How long does it take to get the pigeons used to a new home?
4. How do carrier pigeons carry messages?
5. Will the development of the wireless telegraph and telephone make the use of carrier pigeons unnecessary in future wars?

A BOY or girl can be sent as a messenger to carry a letter anywhere. You know how that is done. You can carry a letter from your home to some other place, or when you are away somewhere you can take a letter back to your home.

Did you ever wish you had wings?

One kind of bird is often made to carry letters. It can fly very fast and very far, but cannot be sent to carry messages anywhere except to its home. The message to be sent is written on thin paper and fastened to its leg.

This bird is a certain kind of pigeon much like the pigeons or doves which may be seen in city streets both in this country and in Europe hunting about for stray bits of food. It is one of the many kinds of

pigeons which live near the dwellings of men and which depend more or less on men for their food and shelter. Such pigeons are said to be domesticated. But there are also a great many species of wild pigeons. All pigeons are good flyers, and the interesting things about them are enough to fill a book.

One kind of wild pigeon — the passenger pigeon — was very numerous in the United States in pioneer times. In the spring of the year these birds could be seen flying north on their way to the forests where they made their nests and reared their young. They flew over the country in flocks so great that they covered a large part of the sky like a dark cloud. In one of these flocks there were often millions of pigeons. In the novel called *The Pioneer* James Fenimore Cooper describes the flight of these birds in New York and the ruthless way in which they were killed by hunters. People still alive remember the immense flocks which, as late as 1870, flew over the northern states of the Mississippi Valley every season, and how they were massacred by thoughtless hunters in the time of nesting. But now these birds are no longer seen in the haunts where they once numbered millions. Like the prairie chicken and the bison they have failed to survive the reckless attacks of man.

All the domesticated kinds of doves, or pigeons, are the offspring of the wild rock pigeon. Charles Darwin, the famous man of science, made many experiments

with this bird and studied year after year the changes of form and color which he was able to bring about in its offspring. Some children of the rock pigeon are very unlike it, and very unlike one another. Pouters and tumblers, for example, with their odd shapes, look out of place in the same family with the doves of our streets and the carrier pigeons, and yet that is the family to which they truly belong.

The most interesting child of the wild rock pigeon is the carrier pigeon, more often called the homing pigeon, because it returns from far away to its home. The homing instinct of the carrier pigeon makes it useful in war as the bearer of messages through the air when the dangers below are so great that no human being would be likely to get through them alive. It was thus used in the World War, particularly by the British, French, and Americans. In the British service there were more than 80,000 homing pigeons. Near the end of the war, many pigeons were used by the American soldiers in the terrible fighting of the Argonne region. Here all the weapons of modern war were brought into play in their most frightful form, and at times no word could have been sent from the front to the rear without the help of these pigeons. Even the birds were sometimes wounded, though they flew high in the air.

The homing instinct of the carrier pigeon must be developed by patient training to make it useful in war. Without training it is feeble and uncertain. The young

birds are housed in lofts behind the lines. These are low shelters not unlike chicken houses, so built that they can be kept clean and supplied with fresh air, food, and water. Each loft has a keeper who makes friends with the pigeons in his charge and knows every bird of the flock. He also takes pains to have the pigeons know their keeper by sight and become fond of him. With this end in view he always wears the same clothes when he goes among them, and of course his manner toward them is very gentle. The training of the carrier pigeons is by love and not by fear. They learn to fly about the keeper, perch on his shoulders, and pick grains of corn from his lips. But they fear strangers and fly away when one comes near.

Their homing instinct is developed by slow stages. The keeper begins by letting them out of the loft about half an hour before feeding time morning and evening. When they have flown around for a while exploring the neighborhood, he calls them in by rattling grain in a pan, and they all come, the hungriest first. After a few days of this some soldiers are chosen to carry half the flock in baskets half a mile or so from the loft toward the battle front. Here they are let out, one or two pairs at a time. The birds rise into the air, circle around until they see the loft from which they came, and then fly directly toward it. As they come near, the keeper calls them in by rattling grain in a pan. When the first half of the flock has had its lesson for the day,

the other half is trained. Half the flock is always kept in the loft so that the birds flying back will see them and feel that they are returning home.

Step by step the pigeons are taken to greater distances until they can be depended on to come home from any part of the fighting line. Their education is then finished. But the roar of battle is so terrifying to some of the poor birds that they fail in this final test.

When the battle front has been shifted very far to a new position, it becomes necessary to choose a new location for the home lofts. Then the training must begin over again. It takes about three weeks to get the pigeons used to a new home. During that time some of them will sometimes fly back to the old home, where men are on the watch either to drive them away or to catch them and carry them to the new place.

The trained pigeons are taken to the front from time to time, and kept there several days, well cared for in special cages that can be carried on a man's back. With each cage is a large bag that can be used to cover it during a gas attack by the enemy.

Pigeons are carried in the tanks, or automobile forts, that sometimes break through the enemy's line and have no other way of sending messages. They are carried by soldiers advancing to attack in the open; for parts of the line may be separated from others and cut off by the enemy. It was a carrier pigeon that brought the message telling the position of the famous "Lost

Battalion" during the American advance through the Argonne. This battalion was not really lost, for its officers knew just where it was, and sent the message to tell the commander of the army; but the German forces that surrounded it were so strong that it could not be rescued for several days.

The message which the pigeon is to carry is written on very thin paper and inclosed in a delicate aluminum case which is fastened to the pigeon's leg by clasps in such a way as not to hurt or annoy it. When the pigeon reaches home after its perilous flight from front to rear, the keeper removes the letter and sends it to the proper officer. During the siege of Paris in 1871 carrier pigeons were used to send letters out of the city. The writing was photographed on thin paper, making the letters so small that there was room for many messages on one small sheet which was inclosed in a quill. Thus a single pigeon bore many messages in its flight.

Carrier pigeons have been used to send messages both in war and in peace from very ancient times. The telegraph has taken their place in peace except as a fad of bird lovers. How soon may the wireless telephone and telegraph take their place in war?

19. THE MEANING OF COMMON WORDS

You will remember the earlier exercise in choosing the right word. This exercise is like it. Choose from the words given those which make the best sense. Put the word you have chosen after the number of the sentence on a sheet of paper.

1. Civilized men usually (*contest*, *conquer*, *control*) savages in battle.

2. A good scout shows (*courage*, *comfort*, *sorrow*, *interest*) when in danger.

3. The sailors (*supported*, *occupied*, *toiled*, *climbed*) all night at the pumps to keep the ship afloat.

4. The leader went back to the (*conference*, *system*, *conversation*) to talk over the plans for the day.

5. Mining coal is one of our greatest (*crimes*, *manufactures*, *industries*, *commerces*).

6. Armies usually (*rout*, *retreat*, *march*) when the enemy is much stronger.

7. The (*slope*, *descent*, *precipice*, *ladder*) was too steep to climb.

8. James does such good work that he is (*superior*, *inferior*) to the whole class in writing.

9. The (*umpire*, *empire*) decided that we had won.

Is there any word here which you never use in talking? Think of a sentence in which it fits. If you use it a little, it will be yours.

20. THE WAR AGAINST DISEASE

There is one war that never stops, the war against disease. Men and women have given and must still give their lives to stop contagious disease. We can and should be soldiers in this war. This lesson tells how we can help. Write down on a sheet of paper all the suggestions you find here. You may think of others. Make a separate list of those. The good citizen knows and follows these rules.

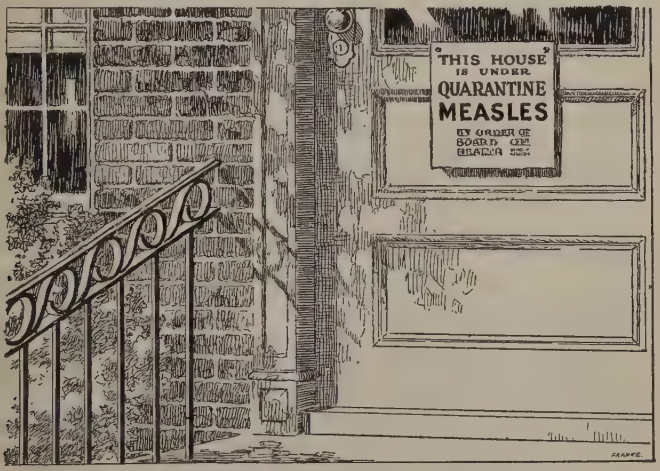
YOU have probably had the measles, mumps, whooping cough, or scarlet fever. You caught or contracted these diseases from some one else. Because they are catching they are called contagious. You may have been obliged to remain at home from school or picnics because some member of your family had a contagious disease. You may have felt at the time that it was a hardship to do so, but certainly you would not wish to spread disease in your community, and your staying at home was to prevent a further spreading of the epidemic.

What do you think of people who do not report a contagious disease? Are they coöperating for the common good? A contagious disease sign on a house may prevent many people from being sick; it may even save life, because it warns every one of the danger of catching the disease if one enters the house.

Perhaps you were first made aware of health regulations when you had to be vaccinated before you

could go to school. This was done to help prevent the spread of a once dreadful disease. Before the value of vaccination was understood and before health became a community matter, thousands of people died from smallpox, and many others were disfigured for life by ugly marks on their faces.

The great Panama Canal might never have been



One Way to Fight Disease

built if Major Walter Reed, for whom a great national hospital in Washington is named, had not discovered that a certain species of mosquito carries the disease germ of yellow fever. By getting rid of these mosquitoes it was possible for Colonel Gorgas and others to prevent the spread of this deadly disease. This discovery not only saved thousands of lives, but made possible one of the great improvements of our time.

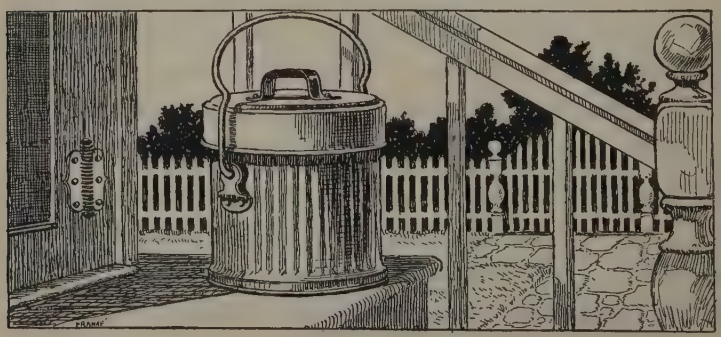
Boys and girls all over the country are taking part in campaigns against flies because they have learned that flies carry typhoid and tuberculosis germs. They also understand that it is quite as necessary to keep the garbage can clean and covered as it is to kill the flies, because a dirty garbage can, left open, is just the place to breed flies and disease. In the country it is equally important to keep the horse and cow stables clean, and to spray the manure with poison or put it in closed pits. By the proper disposal of garbage and manure, the breeding places of flies, a great deal of serious illness can be prevented. For the sake of your own health and the health of your friends you should join in the "swat-the-fly" campaign. But you will know that one of the best ways to get rid of flies is to get rid of their foul-smelling breeding places.

— From *Everyday Civics*, by Charles Edgar Finch.[1]

1. Do these words explain themselves?

contagious epidemic species

[1] Copyright, 1921, 1925, by American Book Company.



21. RAISING ORANGES

This selection is full of interesting information about something with which you may be familiar. Read it rapidly, but be sure to get the important facts.

Wait until your teacher gives you further directions before you begin to read.

ORANGES are such a common article of food that we are not surprised to learn that raising and marketing them is one of our important industries. Let us go into a large grove of orange trees and see how the fruit grows.

We are first impressed by the beauty of the grove. The trees, nearly uniform in size and shape, have been planted in long straight rows. When the trees are in blossom, the grove is so fragrant that you can smell it nearly a half mile away, and birds and bees come by the thousand to the trees. At harvest time the ripe, golden fruit, peeping out from the green leaves, presents a picture that we shall not soon forget.

Orange trees will begin to bear fruit when they are about six years old, and with proper care a tree will produce about 500 oranges each year for from 50 to 100 years. Oranges cannot be grown in a climate where severe frosts occur. Weather conditions must be watched with great care. If there is any danger of a frost, everything must be in readiness for the lighting

of fires throughout the grove so as to keep the temperature about the trees above freezing. In many big orchards there is a system of alarm bells which warn the watchers at night when the temperature is reaching the danger point.

When the oranges are ready for the market, they are gathered with great care. The men who do this work cut off the ripe fruit with scissors and drop it gently in bags slung over their shoulders. They even wear canvas gloves so that their finger marks will not scratch the skin of the fruit.

Near the orchards are large packing houses where many men and women, as well as boys and girls, are employed to prepare the fruit for shipment. The one that we are visiting is in Orange County, Florida, and is built alongside the railroad tracks. After the oranges have been brought to the packing house, the fruit first goes into the hands of the washers. Every orange must be well scrubbed before it is packed. In some places this work is done by boys and girls, and in other places by a machine which brushes the fruit as it rolls along in a stream of water.

As the oranges are of different sizes when they come from the trees, they must be sorted according to size, for the larger ones usually bring a higher price. After the washing, therefore, the oranges are put into grading machines which separate them according to size. They are next carried into the shed to be packed. The men

do this work with surprising skill and speed. Each orange is wrapped in a piece of tissue paper and packed carefully but closely in a box. The boxes are of uniform size, two feet long, one foot wide, and one foot deep. The number of oranges in a box, therefore, varies with the size of the oranges. A box usually contains about 96 of the largest size and as many as 200 of the smallest.

After this the boxes are carefully nailed up and loaded upon cars for their long journey to the markets. The cars are well ventilated, the boxes being so arranged that the air can circulate freely among them; and, if it is warm, iced cars are used. The fruit keeps well, and often is not eaten until several weeks after the time of picking.

22. THE STORY OF ALI COGIA

Hundreds of years ago this story was written, and it has since been read by thousands of children. You will enjoy it much better if you decide to act it out, as did the boys in the story itself.

First read the story through, and then discuss in class how best to dramatize it. You will need to reread and study parts of the story, in order to make a good play.

What characters are needed?

What are the exact words that should be spoken by each character?

MANY years ago there lived at Bagdad a well-known merchant named Ali Cogia. He was neither rich nor poor, lived in a house of his own, and was contented and happy.

But it happened that for three successive nights he had a remarkable dream, which gave the occasion of this story. A venerable old man came to him in a dream and, with a severe look, reprimanded him for not having made a pilgrimage to Mecca. On the third

night the vision said, "Do not put off too long your duty as a good Mohammedan."

Ali Cogia was filled with alarm at these warnings and felt that he would not be happy again until he did his duty. He sold all his goods, therefore, keeping only some articles which he thought he might trade to good advantage at Mecca. He had left a thousand pieces of gold which he wished to leave behind in a safe place. After some perplexity, he adopted this plan. He put the pieces of gold in a large jar, and covered them with olives. This jar he carried to a friend of his and asked that he be allowed to leave it in his friend's storehouse until his return from Mecca. Ali spoke of it simply as a jar of olives, but did not say a word about the money which lay concealed at the bottom.

His friend, who was named Noureddin, gave his consent readily, handing him the key to his storehouse, and said: "Here, Ali, take the key of my storehouse, and set your jar where you please. I promise you shall find it there when you return."

Shortly after this, Ali Cogia set out with the caravan for Mecca, where he performed the holy rites which all good Mohammedans observe when visiting the sacred place.

But Ali did not immediately return. His duties being completed, he next went to Cairo, having heard of a good market there for his goods. Then he went to Jerusalem and Damascus, for Ali found that trade

was good, and he enjoyed seeing so many new and beautiful places. In fact he found traveling so interesting that it was fully seven years before he turned his steps homeward toward Bagdad.

All this time the jar of olives had stood undisturbed in Noureddin's storehouse. But it so happened that only a few days before Ali Cogia came home, the wife of Noureddin expressed a wish for some ripe olives. This brought to his mind the jar that his friend had left with him so long before, and turning to his wife he said: "The places where olives are for sale are now closed, but do you recollect the jar of olives that Ali Cogia left with me before he set out on his pilgrimage? Perhaps they are still good. If they are, you shall have some."

"No, no," exclaimed his wife. "The olives were left with you as a sacred trust. It would be the height of dishonor to meddle with them in any way. They must be all moldy and spoiled. I beg of you to let them alone."

But Noureddin turned a deaf ear to his wife's entreaties. He opened the jar and found, as he had feared, that the olives at the top were moldy and good for nothing; but thinking to find them better at the bottom he emptied them all out, and, of course, disclosed the hidden gold. "Ah! what have we here?" he exclaimed, as the pieces of gold rolled out on the floor.

Noureddin could not resist the temptation. He

spent the whole night in thinking how he might take Ali's gold, and not be found out. "The jar has been left in my charge simply as a jar of olives," he said to himself, "I will take the gold and say nothing." Then replacing the olives he found that the jar was only partly filled. "This will never do," he thought, "I will throw all the old olives away and replace them with new." So the next day he went to the market place and purchased enough olives to fill the jar completely.

When Ali Cogia arrived at Bagdad, his first visit was made to Noureddin, for he was naturally anxious about his gold. His former friend received him with what appeared to be great joy, saying: "I am delighted to see you after your long journey. I had fears that something had happened to you." Then handing Ali the key to the storehouse, he continued: "Go and get your jar of olives. You will find them just as you left them."

Ali Cogia thanked his friend, and taking the jar home turned out the olives. He was surprised to find that it contained nothing but olives. He returned in haste to Noureddin and tried in a friendly way to get him to return the gold. "If you have need of the money in your business," he said, "you are welcome to its use. Only give me an acknowledgment, after which you may pay me at your convenience. Do justice by me, I beg of you."

But the covetous merchant would not listen to his

pleadings. He knew that Ali Cogia could produce no proof that he had left the treasure in his charge, and he felt sure that his own character as an honest merchant would bear him against one who had been absent so long and who was almost unknown in his native city.

Indeed, it turned out just as Noureddin had foreseen. When the cazi, or judge, had heard Ali Cogia's complaint, he called upon Noureddin for his defense, which he made as follows:

"It is true that Ali Cogia, seven years ago, at his own request, left a jar in my storehouse which he told me was filled with olives. I never saw the jar. I gave him my keys and he carried it to the storehouse himself. He left it where he pleased, and when he returned he found it in the same place, covered as he had left it. He did not place in my care any treasure, and he never told me that such a sum of money was in the jar. He has no witness to prove that he placed money in it. He might just as well demand of me a jar of diamonds and pearls."

The cazi, finding that Ali could bring no witness to prove that he had placed gold in the jar, refused to listen further to his complaint and dismissed it at once. But Ali was not willing to give up his gold so easily. He therefore drew up a petition to the caliph — the highest judge in the city — to hear his tale, and the caliph at length fixed a day for the hearing.

Now it happened that the evening before the case was to be tried, the caliph and his grand vizier were walking disguised through the city when they met a group of children and heard one of them say, "Come, let us play that I am the cazi and we will try the case of Ali Cogia"; for the case, indeed, had attracted much attention among the people of Bagdad. "Come," said the boy, "I am the cazi. Bring Ali Cogia and the merchant who cheated him out of his gold before me." At once the caliph became interested and, quietly taking a seat near the children, he and his friend listened to every word that was said.

The first to speak was the boy who pretended to be Ali Cogia, who said that he had left the jar of olives, in which was placed a bag of gold, in the care of his friend, and that upon his return the gold was missing. Then another boy, who took the part of Noureddin, replied in just the way that Noureddin had done at the real trial, saying that he knew nothing about the gold, that it was only a scheme of Ali Cogia's to defraud him, and that to all he had said he was willing to make oath.

"Wait a moment," said the youthful judge, "before you make oath; bring before me the jar of olives." Two of the boys pretended to bring forward a jar, and each party, Ali Cogia and Noureddin, agreed that it was the identical jar that was then in dispute. The young judge ordered the jar to be opened and he

pretended to eat some of the fruit. "These olives," said he, "are excellent. I cannot think that olives will keep seven years, and be so good. Send for some olive merchants to get their opinion."

Two other lads now presented themselves as dealers in olives. The pretended judge demanded of them how long olives would keep fit to eat. The merchants answered, "Let us take what care we can, they will lose their taste and color by the third year."

"Look, then," said the young judge, "into this jar and tell me how old those olives are."

The two imaginary olive merchants pretended to examine and taste the olives, and, turning to the judge, the leader said, "We both agree that these olives are of this year's growth, for they are new and good."

"New!" exclaimed the judge. "Noureddin here is ready to swear that they have stood for seven years in his storehouse."

But both the young olive merchants cried, "It is impossible; it cannot be; we know better, and we are sure that these olives were picked during the present year."

At this point the one who pretended to be Noureddin attempted to make reply, but the youthful judge would not hear him. "Hold your tongue. You are a rogue and have ill-used the friend who trusted you. You ought to be hanged." At this ending of their play the children clapped their hands with great joy. Then

seizing the make-believe criminal, they pretended to carry him to be hanged.

The caliph requested his friend to find out the name of the boy who had taken the part of the judge and to bring him into court the next day.

When the trial was about to start, the caliph spoke to the boy and said, "Are you the one who acted as judge between Ali Cogia and Noureddin at the play court last night?"

"Yes," answered the boy, modestly.

The great judge, seeing that the child was filled with awe, took his hand, leading him to a seat close by his own, said: "My son, do not have the least fear. Nothing will harm you. But if you are willing, I should like to have you act as judge between the true Ali Cogia and the true merchant," and, turning to Ali Cogia and Noureddin, he ordered them to tell their stories to the child, who would do them both justice. "If he needs any help," continued the caliph, "I will assist him."

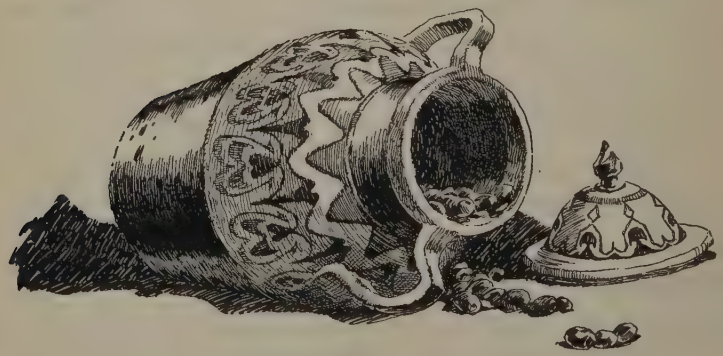
At once every one was interested in a trial where a boy sat as judge. Ali Cogia now told his tale as before, and Noureddin made the same plea — that he knew nothing about the gold and the jar of olives — and offered to take oath that what he had said was true. "It is too soon," said the boy. "It is proper that we should first see the jar of olives."

The jar was brought before them and acknowledged

by both men. The fruit was tasted by the caliph and also by two olive merchants, who had been summoned. The olive merchants swore that the fruit was of this year's growth, and the treachery of Noureddin and his evil treatment of Ali Cogia were plain to every one.

At length, when the time came to order Noureddin to be hanged, the boy looked up at the real judge and said, "Commander of the Faithful, this is no jesting matter; it is your Majesty who must condemn him to death, although I did it in play yesterday."

— Adapted from *The Arabian Nights*.



23. MACHINES THAT MEASURE TIME

Would you like to know more about clocks and other machines for measuring time? This article, which is taken from an encyclopedia, will tell you many interesting things about them. Read the article with the purpose of finding out the various ways that men have used for measuring time. List on paper all the ways mentioned here.

Some of you may be interested to bring to class a watch or a small clock and to show how it works and how it is regulated. You may need to reread parts of the selection to find this out.

"WHAT time is it?" you ask. Centuries of scientific progress, with vast labor and years of patient study, have been necessary to answer that question correctly.

At first men had no way of measuring time by day except by the position of the sun in the sky and the shadows it cast, and by night they could only guess from the position of the stars. This was of course a very rough-and-ready method, and did not mark time out into such exact intervals as we have in the hour, minute, and second. For ordinary purposes even the highly civilized Greeks usually indicated time by only such vague terms as "dawn," "full market," "noon," and "sunset." The ancient Babylonians were the first to hit on a better way of measuring time, by making sundials. They stood an upright rod so that it cast its moving shadow on a smooth surface marked

off into twelve intervals, roughly equivalent to our hours. The Greeks used this instrument when they needed sharper divisions of the day, and it remained the most general time-measuring device down to the fourteenth and fifteenth centuries of our era.

But sundials can tell time only when the sun is shining. A more reliable kind of clock was invented by the Egyptians, and copied by the Greeks and Romans. This clock, known as the water-clock, marked off the hours by the dripping of water through a tiny hole in the bottom of a jar. As the surface of the water lowered, marks came into sight which told the hours — or a receptacle below was filled, or the weight of the water was used to operate a pointer traveling around a dial.

In the Middle Ages the hourglass or sandglass came into use. In this instrument sand runs from one hollow glass cone to another through a tiny hole in the center, the quantity of sand being carefully measured out to take just an hour, or a certain part of an hour, to run from one compartment to the other. Hourglasses were often used in churches during the seventeenth and eighteenth centuries to mark the length of the sermon. Smaller sandglasses, taking three minutes to run out, are still used in some districts for marking the time for boiling eggs.

Sometime during the Middle Ages, no one knows just when, a form of clock which is still in common use was invented — the form in which a weight, attached

to a cord or chain, turns a set of geared wheels which operate a pointer traveling around a dial, as in our grandfather's clocks. Various devices were invented to regulate the speed at which the weight falls, but the best and simplest device, the pendulum, did not come into use until after Galileo in the seventeenth century had discovered that the successive small vibrations of a pendulum are made in equal times.

In olden times people didn't have to catch trains, and life was far less complicated; so minutes were not very important, and some of the early clocks had no face at all, — the bell at the end of the hour was the only means of knowing what time it was. Indeed, the word clock comes from the French word *cloche*, meaning bell.

To understand how clocks are operated let us study the mechanism of a grandfather's clock. In plain sight are the weight, which furnishes the power, and the pendulum, which regulates the speed. Up behind the dial is a Chinese puzzle of wheels. The pendulum rod is hung by a thin spring of steel that bends easily and allows the pendulum to swing just so far and then gives it a slight push back. The cord or chain to which the weight is hung is wrapped around and around a drum or barrel, like a rope on a windlass. But the barrel cannot move until the pendulum is set swinging. Start the pendulum and the whole clock wakes up, like the palace in the story of *Sleeping Beauty*.

Attached to one end of the barrel is a cogged wheel,

and attached to the pendulum is an anchor-shaped piece of metal with its two points shaped so they can catch in the teeth of that wheel. As the pendulum swings, the anchor or lever-catch rocks up and down; the point on one side lets go of a tooth of the wheel, but just as soon as it has turned forward one cog, the point on the other side catches the wheel again. It is this constant catching and letting go which makes the ticking sound. Every time this happens, the pendulum is given a little push which keeps it swinging.

The other wheels of the clock are geared to the barrel wheel and are made of such size that they run at different speeds — one turning the second hand (if there is one), another the minute hand, and another the hour hand. The pendulum, you might say, is the engineer. The lever-catch is the throttle. The barrel, cord, and weight furnish the power to drive the slow-moving engine.

The whole duty of the clock-work is to drive the hour hand at a regular rate around the dial, twice in 24 hours. Sometimes a clock goes too fast or too slow and must be regulated. A pendulum clock is regulated by pushing the "bob" of the pendulum up or down on the rod. The time it takes a pendulum to swing depends upon the length of the rod. The longer the rod, the slower the beat; so if the clock is fast, we screw the bob down, and thus increase the length of the pendulum.

Some of the early clocks were very wonderful, indeed, and it took years to make them. There is a famous old clock at Strasbourg which not only tells the time of day, but also the day of the week, the month, and the position of the moon and the planets. At various times processions of tiny figures cross a stage, including a cock that crows. The day of the week is indicated by a separate little figure that takes its place on a tiny platform.

A clock in Venice has two bronze giants that strike a bell on the hours. Other clocks had figures that appeared and danced to a strain of music each hour. Cuckoo clocks, from which a little wooden bird pops out, sounding the hours, are quite common to-day.

A gigantic clock was built in the United States for the Colgate factory in Jersey City in 1908. The two hands weigh together more than half a ton, and the great 400-pound pendulum is kept going by a little gravity arm that falls against it. Its dial is nearly 40 feet in diameter and can easily be read at a distance of three miles. The tip of the minute hand, which is 19 feet long, travels 23 inches every minute or more than one half mile a day.

It was obviously impossible to make small clocks or watches, so long as the weight and pendulum were the only methods of furnishing and regulating the power. Small clocks and watches are made possible by the use of a coiled spring to furnish power, and a balance

wheel to time the speed. The first clocks small enough to be carried about were made in Germany about the end of the fifteenth century.

If you open the back of a watch, you will see a fussy little wheel turning back and forth rapidly, while a tiny hairspring contracts and expands. This is the balance wheel, which takes the place of the pendulum. If you look closely, you will see near by a small wheel with hook-shaped cogs, which is turning around quite fast; this takes the place of the barrel cogwheel of the grandfather's clock. Those little hooks catch in a tiny rocker fastened to the balance wheel, just as the lever-catch did in the clock; and, as they strike that rocker, they give it a little kick, which swings the balance wheel around, tightening the hairspring. Then the tension on the hairspring swings the balance wheel back again, another little hook is released, and the next hook strikes the rocker, and so on.

In most watches there is a little pointer over the balance wheel, which can be moved back and forth between the letters *F* and *S*, engraved on its metal support. When you move it toward *F*, you tighten the hairspring, which gives the balance wheel a quicker swing and makes the whole watch run faster. When you move it toward *S*, the hairspring is loosened, and the watch runs slower. Great care must be used in regulating a watch in this way, for the parts are exceedingly delicate and sensitive.

Small clocks operate on the same principle as watches. Alarm clocks are equipped with an extra spring attached to a bell, and are set off with a trigger which is pulled when a certain wheel, moving twelve times slower than the hour hand, reaches the set point.

A watch is perhaps the most wonderful little machine in the world. Packed away in a case sometimes no bigger around than a twenty-five cent piece and less than a quarter of an inch thick, are from 150 to 800 separate parts. There are wheels of many sizes and shapes, pinions, plates, screws, rivets, pins, springs, and jewels — the latter used as durable bearings for the watch pivots. Many of these parts are so small that watchmakers have to pick them up with tweezers or magnets, and find the places for them with the aid of a magnifying glass held in one eye

For a long time watches were made entirely by hand, and they were so expensive that only the rich could afford them, and if one of the little parts broke, what trouble and expense there was in getting another part to fit! These early watches were often big clumsy things that were almost too large for the pocket.

But now machines, most of them invented in America, make watch parts in such quantities and so cheaply that a dollar or two will buy a small neat watch which will keep good time for quite a long while. And each part is so standardized and made with such accuracy that it will fit into any watch of the same kind. It is

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largely through American ingenuity in devising the wonderful machines which make these parts that watches have been put within the reach of all.

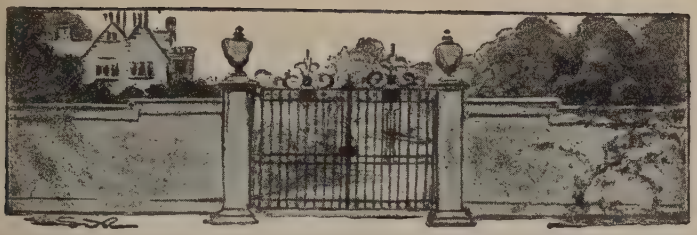
When the development of electricity provided a new form of power, clockmakers were among the first to adapt it to their uses. While there are some clocks which operate entirely by electricity, the ordinary electric clock is merely a mechanical clock of the old type, which controls an electric current. This current in turn is used to move and regulate the hands on a distant dial or on several dials at the same time. The thousands of clocks marked "Regulated" you see over the country work on still another principle. Every hour they are set automatically by the master clock, and while they provide their own running power they are wound and controlled by electricity.

— From *Compton's Pictured Encyclopedia*.[1]

1. Words to be studied and explained:

equivalent receptacle geared standardized

[1] Reprinted by courtesy of F. E. Compton and Company.



24. A SUGGESTION FOR CITIZENS

In this lesson you may learn something you can plan and do together. Working together to help every one is a part of the fun of a good citizen. Boys and girls can be good citizens as well as older folks. Read this article and decide what good suggestions are in it and then plan together what the class can do.

EVERY one knows the need of the regular spring and fall house-cleaning. Like good housekeepers most villages, towns, and cities now have their annual "Clean-up Week." During this time ashes, tin cans, and rubbish are removed; and unsightly alleys, back yards, and vacant lots are cleaned up. Both young and old unite in this undertaking, which adds much to the beauty and general attractiveness of a community. Like good housekeepers also, the community finds it well worth while to keep the place clean all the year.

Such a movement furnishes one of the best ways of encouraging coöperation. If given the opportunity, loyal American boys and girls may be counted upon to do their share in making the home town more beautiful, more sanitary, and a more desirable place in which to live.

The students in a large city school located on park property got together and drew up a list of rules which they agreed to do their best to carry out. Among other things the list included such matters as obeying all signs in the park, using the cans provided for refuse, keeping the lawns and walks free from papers, and the park buildings and sidewalks free from chalk marks. Accompanying the rather long list of suggestions was this statement: "We believe that if we live up to these rules the park will be rendered more beautiful and that we ourselves will acquire a greater respect, not only for this piece of property, but for all public property of the city, state, and nation."

One member of a class that had been making a list of things that junior citizens might do to help clean up and to keep clean, summed it all up as follows: "These are only small things but they count."

Have you ever wondered why some people who own large estates cultivate tall hedges or plant shrubs on the borders of their lawns, thus shutting from view their beautiful grounds and houses? Many of these estates were at first open to the view of all who passed; but thoughtless persons trampled the carefully mowed lawns or picnicked in the shade of trees, leaving paper cups, tin spoons, soiled paper plates, oiled paper, and newspaper to blow where they might with not a thought for the owner of the property.

By placing benches near the highway, the owner of

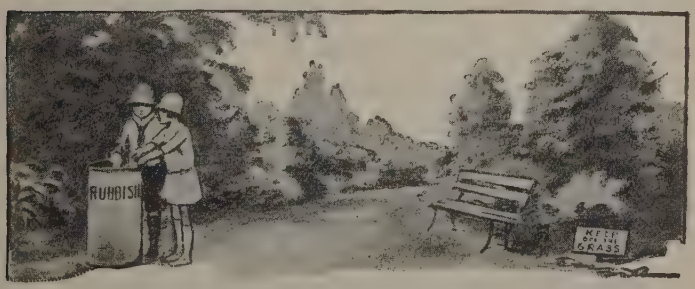
one large country estate tried the experiment of inviting picnickers to share his spacious grounds and rest beneath the shade of his beautiful trees. He even furnished refuse cans for the use of those who took advantage of his kindness. It was not long, however, before the benches were removed and "No Trespassing" signs took their places. As so often happens, the thoughtless few who disregarded the reasonable request of the owner had made it impossible for many a grateful passer-by to enjoy this delightful spot.

In spite of signs posted in public parks reading, "Clean Up Rubbish," or "Throw Papers in this Box," remnants of lunch boxes can be seen from one end of a park to the other after almost any holiday. It is generally the fault of careless campers and picnickers when places of beauty are closed to the public.

Those who enjoy beauty and freedom always need to think of giving as much as they get to others.

— From *Everyday Civics*, by Charles Edgar Finch.[1]

[1] Copyright, 1921, 1925, by American Book Company.



25. AN UNGRATEFUL BEGGAR

Here is an interesting story about a bird that is cruel and unlike his companions.

When you have finished reading it, tell whether you think the title is good. If you do not think so, suggest a better one. Ask your teacher what qualities a good title should have.

AMONG all the birds of America, the cowbirds are the only ones known that are too worthless to have homes of their own and to care for their own children.

Some kinds of birds do not build nests, but lay their eggs on the ground and allow the sun to do the work of hatching for them, but all, except these tramps among birds, look after their little ones in their own way.

The father cowbird does not look like such a worthless fellow as we see him with a group of his kindred in the pastures. He wears a coat of glossy black reflecting many colors in the sunlight, while his head, neck, and breast are covered with neat, clean-looking feathers of chocolate brown. His mate seems a little more of a vagabond in garments of grayish brown, which look more like the worn and dusty clothes the homeless usually wear.

Instead of building a nest and bringing up a respectable family of her own, she lays her eggs in the nest

of some other bird, usually one too small to throw the egg from the nest. She flies about among the low bushes where these little birds, vireos, yellowbirds, goldfinches, and sparrows build, and when she finds one of the little home makers away from her nest, the cowbird leaves an egg and flies off.

A Cowbird

If it should happen to be the home of a yellowbird in which she has left her egg, and the owner of the nest has not yet laid any of her own, she will build a neat floor over the egg of the intruder. Then her own will be laid and hatched, and her family be brought up in peace and comfort.

Other little birds, on finding a cowbird's egg in their nests, will desert the homes which have cost them so much hard work if no eggs of their own have been laid. But if some of their own are already in the nest, these little people, after talking the matter over, usually decide to stand by their homes and do the best they can. Poor little things! They do not know that this will mean death to their own babies.

The awkward, ungainly child of the cowbird will come out of its shell a day or two before the babies who really belong in the nest will first see the light.

It will immediately open its begging mouth and call loudly for food, which the kind little foster mother will get for it.

The beggar child is larger than her own babies, because it came from a larger egg, and also because it is a day or two older. Being larger, it will get most of the food brought to the nest. The egg out of which it came got more warmth from the breast of the little mother than her own eggs, by being larger and pressing harder against her. After getting the warmth which should have gone to her own babies in the shells, it is now to get the food which should be theirs.

Every time the tiny parents come with choice things to eat for the babies in the nest, this great overgrown child with wide-open mouth and noisy voice is begging for a morsel. Reaching higher and having the larger mouth, he is apt to get it, too.

Then, as he scrambles about in his awkwardness, the little ones are often injured or smothered. In this way the rightful children in this home in the bush are cheated out of the air, even, which should be theirs to breathe.

And so it will happen that some day, when the little mother returns to her nest with food for her family, she will find the dead body of one of her little ones instead of the warm little baby form she fondly expected to see.

Miserable as she feels, she will not have much time

for grieving, for there are other hungry baby mouths to be filled; so she sadly takes up the little corpse and bears it silently away, dropping it to the ground when at some distance from her nest.

As the beggar child continues to grow larger on the food which does not belong to him, in the home which his mother stole for him, the rightful children in that home will, one by one, lose their lives. The little mother, not knowing that her grief has all come through her kindness to the stranger, will go on feeding it till it leaves the nest, and after, for this lazy adopted child will never work till he is compelled to do so.

This is the reason why we sometimes see little yellow birds or sparrows hopping about on the ground and feeding one large and ungainly young bird of another kind.

Every time we see anything of this kind we may know for a certainty that a bird home has been ruined, and that the bereaved mother is now wasting her love on an ungrateful stranger who will leave her as soon as she ceases to be useful to him. Like all other tramps and loafers, he will naturally find others of his kind with whom he will associate. These worthless friends this little tramp will find in the pastures or barnyards following the cattle and feeding on the insects which collect around them.

The cowbird has no music in his voice, but sometimes may be heard boasting to his friends and swelling

out his feathers as he boasts, somewhat as a turkey does when telling his turkey friends what a great and wonderful fellow he is.

He really seems at his best while sunning himself and hopping about among the branches in the early morning, with a half dozen or more of his friends. Then we have some sympathy for these poor homeless birds, as we hear them comfortably chatting to each other.

— From *Our Birds and Their Nestlings*, by Margaret Coulson Walker.[1]

1. Compare your definitions with the ones in the dictionary for the following words:

vagabond intruder foster bereaved

[1] Copyright, 1904, by the author.

26. CURIOUS PROBLEMS

These problems are word puzzles. The answers are not hard to get if you read carefully, and keep in mind, when you think, exactly what the problem tells. Find the answer to each and see if you can make the class believe that it is correct. You will need to think more than you will need to use pencil and paper.

1. A man sold his farm for $5000, which is what it cost him. Then he bought it back for $4500, and sold it again for $5500. How much did he gain?

2. There were two Arabs who sat down to eat, one with five loaves and the other with three, all the loaves having the same value. Just as they were about to begin, a third Arab came along and proposed to eat with them, promising to pay eight cents for his part of the meal. If the three ate equally and consumed all the bread, how should the eight cents be divided? Remember that one Arab furnished five loaves and the other furnished three.

3. A man had five pieces of chain, each having three ordinary links, all alike. He asked a blacksmith how much he would charge to make them into one piece of chain. The blacksmith replied that he charged two cents to cut a link and two cents to weld or fasten together a link. How much was the blacksmith's total charge for the job?

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4. A man wanted a blacksmith to put a shoe on his horse. The blacksmith said he would put the shoe on for one dollar, or he would do so if he were paid one cent for the first nail, two cents for the second nail, four cents for the third, and so on, doubling the amount for each new nail. There were to be just eight nails in the horse's shoe. Which way would you choose?

5. A girl was carrying a basket of eggs, and a man driving a horse hit the basket and broke all the eggs. Wishing to pay for the damage, he asked the girl how many eggs she had. The girl said she did not know, but she remembered that when she counted them by two's, there was one egg left over; when she counted them by three's there was one egg left over; when she counted them by four's there was also one egg left over; but when she counted them by five's there were no eggs left over. How many were there in the basket?

— Adapted from *Number Stories of Long Ago*, by David Eugene Smith.[1]

[1] Reprinted by courtesy of Ginn and Company.

27. THE ESCAPE OF FRANÇOIS NAVARRE

This is an anecdote during the War of 1812, when the English and their Indian allies fought against the Americans. It is an exciting story, and you will be anxious to find out what happened to François. A fifth-grade pupil should read it in about four minutes. Time yourself.

WHEN the Hurons came to Sandwich, opposite the Michigan shore, in 1806, and camped near the church for the annual "festival of savages," an old woman of the tribe foretold to Angelique Couture that, ere long, blood would be shed freely and white men and Indians would take each other's lives. That was a reasonably safe prophecy in those days; and, though Angelique repeated it to her friends, she did not worry over it. But when the comet of 1812 appeared the people grew afraid, and with cause, for the war soon began with England. The girl's brothers fought under the red flag; her lover, François Navarre, under the Stars and Stripes.

The cruel General Proctor one day passed through Sandwich with prisoners on his way to the Hurons, who were to put them to death in the usual manner. As they passed by, groaning in anticipation of their fate, foot-sore and covered with dust, Angelique nearly swooned, for among them she recognized her lover. He, too, had seen her, and the recognition had been

noticed by Proctor. Whether his savage heart was for the moment softened by their anguish, or whether he wished to heighten their pain by a momentary taste of joy, it is certain that on reaching camp he paroled François until sunset. The young man hastened to the girl's house, and for one hour they were sadly happy. She tried to make him break his parole and escape; but he refused, and as the sun sank he tore himself from her arms and hastened to rejoin his companions in misery.

His captors admired him for this act of honor, and had he so willed he could have been then and there received into their tribe. As it was, they allowed him to remain unbound. Hardly had the sun gone down when a number of boats drew up at the beach with another lot of prisoners, and with yells of rejoicing the Indians ran to the river to drive them into camp. François's opportunity was brief, but he seized it. In the excitement he had been unobserved. He was not under oath now, and with all speed he dashed into the wood. Less than a minute had elapsed before his absence was discovered; but he was a cunning woodsman, and by alternately running and hiding, with gathering darkness in his favor, he had soon put the savages at a distance.

A band of English went to Angelique's home, thinking that he would be sure to rejoin her; but he was too shrewd for that, and it was in vain that they fired guns

up the chimneys and thrust bayonets into beds. Angelique was terrified at this intrusion, but the men had been ordered not to injure the woman, and she was glad, after all, to think that François had escaped. Some days later one of the Hurons came to her door and pointed significantly to a fresh scalp that hung at his belt. In the belief that it was her lover's she grew ill and began to fade, but one evening there came a faint tap at the door. She opened it to find a cap on the doorstep.

There was no writing, yet her heart rose in her bosom and the color came back to her cheeks, for she recognized it as her lover's. Later, she learned that François had kept to the forest until he reached the site of Walkerville, where he had found a canoe and reached the American side in safety. She afterward rejoined him in Detroit, and they were married at the end of the war, through which he served with honor and satisfaction to himself, being enabled to pay many old scores against the redcoats and the Indians.

— From *Myths and Legends of Our Own Land*, by Charles M. Skinner.[1]

[1] Reprinted by permission of and arrangement with J. B. Lippincott Company, publishers.

28. MAKING IRON WATERPROOF

This is a selection that will give you practice in learning to read rapidly. Remember, however, that it is more important to get the facts than to read fast.

Wait for your teacher's directions before you begin.

WE naturally think that iron and steel are durable as well as strong and tough. But that is not always the case. Iron and steel will rust when exposed to moisture and air and in time will finally waste away by changing into a reddish powder.

It is, therefore, necessary to find some way to protect them from dampness. Fortunately there are several metals which are not much affected by water and air, and these are employed to cover iron or steel. Tin, zinc, and nickel are the most important of these waterproofing metals.

When iron or steel is covered with a thin coat of tin or zinc we can use it for making many things that would not last long without this protection. Think of how much use we find for pails, pans, cans, metal roofing, etc. We say that such things are made of tin, but really they are only of iron or steel covered with a thin coat of tin. We call the material out of which these common articles are made tin plate. It is made by dipping sheets of iron or steel into a bath of melted tin.

You might guess that it would take a large amount of tin to cover so many articles, but in reality this is not so. Pure tin is quite expensive, and a little of it can be made to go a long way, because it is soft and can be easily hammered out into very thin sheets. You have all seen tin foil wrapped around candy, toilet soap, chocolate, etc. Tin foil is also used extensively to make the backs of mirrors. Because tin is so expensive and so soft, it is not used much in its pure state.

There are only a few places where tin has been found in large quantities. The chief sources of supply are Bolivia, the Malay Peninsula, and the East Indies. All the tin mined on the globe in one year is less than one hundred thousand tons, while the iron we mine amounts to more than a thousand times as much. Tin is found in nuggets, grains, and dust, much like the gold that is washed out of the beds of the streams in placer mining. It also exists in rocks, which must be pounded to powder to get the tin out.

A tin mine in England has been worked for two or three thousand years. It is said that the early Romans sailed out through the Strait of Gibraltar and across to Great Britain for cargoes of tin. It lies in granite or slate rock, some of the veins being no thicker than sheets of paper and others many feet thick. In places the tin ore lies in large masses, and at one point there is a great bowl almost a mile in circumference and several hundred feet deep, from which about a million

tons have been taken. When the ore comes to the surface, it is sorted and ground to a powder. Then it is washed to remove the earthy materials, and after that roasted and smelted until the tin is run off into bricks.

29. SAFETY FIRST

An eighth-grade boy gave this talk to the children of a lower grade. After you have read it carefully, write on paper the answers to these questions. Read the article a second time if necessary.

1. Mention a simple rule that would prevent many accidents.
2. How many people were killed by accident in the United States in the year 1919? How does this compare to the deaths of Americans in World War battles?
3. Where do the greatest number of accidents occur?

DO you read the newspapers? Have you noticed how many accidents happen daily that might have been avoided? Not a day passes but that several are seriously hurt or meet death, simply through carelessness. We used to think that accidents were unpreventable, but now we know not only that it is possible to prevent them, but that it is our duty to do so.

Some one might ask: "What can I do? How can I help to promote safety?" Your teachers have given you safety rules which you should follow. Knowing them is not enough. You must use them. If the simple rule, *Always be careful*, were always followed on the street, in the home, and at school, what a number of accidents might be avoided! We should be constantly on the alert, not only in regard to our safety, but in regard to the safety of others.

I am afraid some of us do not realize how important this safety movement really is. Let me quote some statistics to prove to you the seriousness of this matter. We think that the number of deaths in our army in the battles of the World War was great. Yes, it was great — eighty thousand. But think of it; in the year 1919, seventy-five thousand lost their lives in our country through accident. This is only five thousand less than in this great war. It is also estimated that one out of every eight persons in the United States is injured yearly. And when we know that war's casualties were necessary, while those from accident were not, shall we sit by without an effort to reduce that number? Think of your own family. Would you want one of them crippled for life, possibly through your negligence? It is a fact that the greatest number of accidents occur in the home and on the street. Out of twenty-nine thousand accidents in Chicago, fifteen thousand occurred in the home.

Thousands of others will meet a similar fate unless we all unite to help free the country of avoidable accidents. By the combined efforts of men, women, and children, we won the war on autocracy. By the combined efforts of all of us, we shall win this great war on accidents.

— Adapted from *Education in Accident Prevention*, by E. George Payne.[1]

[1] Reprinted through courtesy of Lyons and Carnahan.

30. HOW ABRAHAM LINCOLN GREW UP

See how quickly you can get these facts about the boy, Abraham Lincoln, from this selection.

1. How he dressed.
2. The kind of house in which he was born.
3. What good qualities he showed.

A good fifth-grade reader should do this in seven or eight minutes. Time yourself.

ON the twelfth of February, 1809, in the northern part of Kentucky, a child was born who was to become one of the greatest of men. The parents of the child were very poor, and the log cabin in which they lived was poorer than any house you have ever seen.

"What shall we name this baby boy of ours?" asked the gentle mother.

"Let us call him Abraham," said the father. "The Lincoln family has always had an Abraham in it."

The child was not at all pretty, but he was strong and grew fast. When he became old enough to walk and run, he spent much of the time playing with his sister Sarah, who was two years older than himself. The children had no toys — they did not know what toys were — but they were happy without them. On warm, fair days they were allowed to run among the trees in the grove close by the house; and Abraham learned very early to love the birds, the squirrels, and all the timid, pretty things that make their home in

the woods. Sometimes, clinging to his mother's gown, he would trudge with her across the fields to a neighbor's house, or to the spring for a pail of water, or to the meadow to see her milk the cow. Often of an evening he would run down the woodland path to meet his father coming home with an ax or a gun, or perhaps with a deer on his shoulder.

The child had no shoes for his feet, and his clothing was scanty and poor. His father had no money to buy flannel or calico or cloth of any kind, and so the little that Abraham had to wear was made by his mother at home. She made him trousers of deerskin, and a shirt and jacket of coarse tow cloth. He had no hat, but when he grew larger she made him a coonskin cap which he wore with the ringed tail of the animal hanging down his back. And he was well pleased with his clothing, for his father was dressed no better, and his sister hardly as well.

There was only one room in the log cabin. It served as parlor, sitting room, bedroom, and kitchen, all at the same time. There was no floor, only the bare ground, made very hard and smooth and free from dust. Sometimes in cold weather the mother would spread a great bearskin on the earth before the fire for the children to sit on. There was no door, but only some rough boards leaned up in the doorway at night, or perhaps the bearskin was hung over it to keep out the snow and sleet. There was no glass in

the one little window, and no way to close it except by hanging the skin of a deer or some smaller animal before it, thus shutting out not only the cold but the light also.

At one corner of the room there was a rude bedstead made of rough poles from the woods, and on it was a pile of furry skins and homemade quilts. There were no chairs, only some rough wooden blocks to sit on; and the table was merely a broad shelf, made by driving two long pegs into the wall and then laying a smooth board upon them.

Birthplace of Lincoln

At the end of the room farthest from the bed there was a huge fireplace made of stones and clay. It was so large that logs as big as a man's body were rolled into it and heaped one upon another for the winter fire; and although these logs would crackle and blaze at a great rate, and the flames would roar in the chimney, and the firelight would fill the room with its brightness, the wind would moan through the walls and the cabin in winter was often very cold.

If you had visited that poor cabin, it would have seemed a wretched place with none of the comforts of home. But to those who lived in it, it did not seem so; for it was as good a home as many of their neighbors had, and their minds were cheered with the hope that better times were coming. To the children who had never known any other home, little else seemed needed. Here were kind parents, shelter, and food, a bed to sleep in, a fire to warm one's self by. What more could any one want?

Abraham went to school whenever there was any school to which he could go. This was only for a short while. But his mother helped him in his reading, and taught him to write. At school he studied harder than any of the other children.

When Abraham was seven years old, the Lincoln family moved to a new home in Indiana. They had not much to take with them. The few cooking utensils and the little bedding which they owned were strapped on the backs of two borrowed horses. Then all set out on foot, by the nearest road, to the Ohio River. At night they camped in the woods by the roadside. The father with his rifle killed plenty of wild game for their food, and friendly settlers along the road often invited them to share their meals.

At last, one cold November day, they reached their journey's end, in the thick woods. It was a desolate outlook — no house, no shelter, no neighbors to welcome

them. And yet they were not downhearted. It was the work of only a few hours to build what the settlers called a "half-faced camp." This was nothing more than a shed made of poles and covered with broad pieces of bark. The three sides that were most exposed to the winter winds were inclosed, but the greater part of the south side was left open. The cracks between the poles were filled with leaves or sticks and pieces of clay, and a part of the open side was screened with skins hanging down from the roof pole. At one end of the shed was the bed where the family slept. Opposite the open south side, a fire blazed between two great logs, and there the meals were cooked and eaten. This fire was kept burning night and day, and its warm rays made a part of the shed quite comfortable, even in the chilliest weather.

In this rude shelter the Lincoln family lived all that winter. The father was busy with his ax, cutting down trees, hewing logs for a new house, and making a clearing for a cornfield. The patient mother kept things as tidy as she could, and cooked their simple meals.

Late the next summer, the neighbors for miles around came one day and helped to put up the walls and roof of a house made of the logs which Abraham's father had cut and hewn square. The family then moved into it at once, though it was not finished. It was more than two years before Father Lincoln found time to make a door for it, and a floor, and to chink the cracks between the logs.

Meanwhile a great sorrow had come to the family. The mother fell ill, and though her husband and children nursed her with tender care, she soon died. Abraham was then nine years old, and his sister was eleven. They and a cousin who lived with them were left much to themselves in their lonely home, far from the nearest neighbor. They worked hard. They had plenty to eat, but no one to make clothes for them. Their clothes were in rags when their father went away one day and was gone for several weeks. When he came back he brought with him a new wife, and a load of good furniture and clothing that she owned. How glad the children were to have good clothes again!

Abraham's stepmother was always kind to him, and helped him to read and study, though his father thought it was foolish. The neighbors' boys took much pleasure in trapping possums and wild turkeys, and sometimes on moonlit nights they and Abraham went out coon hunting with their dogs, and had grand fun.

He was far better pleased when he could sit at home in the chimney corner and pore over his books. He had only four or five, but he read them again and again. Where he got them I cannot tell. One was an arithmetic; and many were the evenings which he spent, studying the rules, and ciphering by the dim light of the fire. He had no paper and no slate; but he made his figures on a smooth board or wooden shovel, using a piece of charcoal for a pencil.

Another of his books was a worn and torn copy of *Æsop's Fables*. It was a delightful book. Its queer stories about talking beasts and birds tickled the boy's fancy, and he liked to repeat them to the other lads. In this way he began to acquire that pleasant art for which he was always noted, the art of telling entertaining stories.

While Lincoln was a young man he spent most of his time on his father's farm. He also worked sometimes for neighbors; he began by working three days to pay for a book worth seventy-five cents. For another neighbor he once split fourteen hundred fence rails to pay for a pair of woolen trousers.

Sometimes he worked as a boatman on the streams near home, and twice he made the long trip to New Orleans. When he was twenty-one, he helped his father move to a new home in Illinois, and about a year later he was employed to manage a store in Salem, a very small settlement not far away.

Lincoln was not a storekeeper very long. He was postmaster of Salem for a time, and then worked as a surveyor, but soon became what he had long wanted to be, a lawyer. He became famous as an able and honest lawyer whom everybody could trust. His later life is part of the history of our country, which you will read in many books.

— Adapted from *Abraham Lincoln*, by James Baldwin.[1]

[1] Copyright, 1904, by American Book Company.

31. HOW TO STUDY GEOGRAPHY

Brazil is the largest and richest country of South America. It is important, therefore, that you know something about it. This article is taken from a geography and has been written with great care. The facts you find here are important.

Learning to study geography involves learning to read a textbook. You need to know how to read carefully and thoughtfully. Therefore, first read the entire article to see what it contains.

Now read the first paragraph, consulting a map in your geography. Make a brief outline of what this paragraph tells you. You will find that the result is like this:

1. Size.
2. Population.
3. Climate.

Reread each of the remaining paragraphs and outline them.

When you have finished, you will have written a brief summary of what is told in the article. To be sure that you have not omitted anything, check it carefully.

You may now have some questions of your own. Have these ready to ask during the class discussion.

BRAZIL is in the eastern part of South America. How does it compare in size with other South American countries? It is somewhat larger than the United States, with a population only about one fourth as great. The population is small because so much of the country is low, very rainy, and covered with a dense growth of vegetation, and is in the hot part of the

earth, where only the natives can live and work comfortably. Most of the people of Brazil live in the cooler parts of the country, either in the south or in the highlands near the coast.

A few Indians live in the forests of the interior. They are often employed in finding rubber trees, and in preparing the crude rubber. They first cut gashes in the bark of the rubber trees and catch the milky sap in cups. The sap is collected daily. To prepare it for shipment it must be made into balls of crude rubber. This is done by pouring a little of the sap over a stick that is turned slowly around in the dense smoke of a fire of palm nuts. As soon as the sap dries on the stick, more is poured on and smoked, and the process is repeated many times until a large ball is formed. Most of the rubber is sent to the city of *Para*, near the mouth of the Amazon, and from this port it is carried in ships to the United States or to Europe.

In the plateau region of eastern and southern Brazil the chief industry is farming. Among the crops cultivated are coffee, cotton, sugar cane, tobacco, and cacao. Of these crops, coffee is the most important, and Brazil now produces two thirds of the world's supply.

The ripe berries of the coffee shrub are often called cherries because of the fleshy covering, much like that of a cherry, which surrounds the two seeds, or beans. In preparing the coffee for market, this fleshy covering

is first removed. The beans are then spread out on large trays or platforms to dry, and are turned frequently to prevent their spoiling. Finally they are sorted and packed in sacks for shipment.

In the forests are found woods used in the making of fine furniture, and woods from which dyes are made. Another tree of the forests is the cacao, from the seeds of which chocolate is made.

Cattle are raised on the grasslands in the central and southern parts of the country.

The chief mineral products of Brazil are gold and diamonds, which are found in the plateau region.

Rio de Janeiro, the capital, is the second city in size in South America. It is a large seaport with a fine harbor. *Santos*, farther south, is the chief port for the shipment of coffee. *Bahia* and *Pernambuco*, on the coast to the north, export sugar and tobacco. *Para*, near the mouth of the Amazon, exports more rubber than any other port in America. *Manaos*, in the Amazon basin a thousand miles from the sea, is a rubber-shipping center.

— From *Essentials of Geography, First Book*, by A. P. Brigham and C. T. McFarlane.[1]

[1] Copyright, 1916, 1920, 1925, by the authors.

32. CHOICE OF WORDS

One result of wide reading is a better understanding of the exact meaning of words. The whole meaning of a sentence is changed sometimes if we do not know one word.

This exercise will help you see the difference in words which are nearly alike. Choose from the words in the parentheses the one that is best suited to the sentence.

1. It took him only two minutes to find the answer to the longest (*question*, *problem*) in the arithmetic.

2. The people erected a (*building*, *monument*) on which to place the bronze tablet.

3. The Colonies declared themselves (*independent*, *bold*.)

4. The general was willing to (*endure*, *tolerate*) all hardships with his soldiers.

5. They saw at the museum an automobile which was the (*original*, *new*) model made in 1900.

6. The new school building is (*pretty*, *beautiful*).

7. After completing the work the pupil saw his (*mistake*, *offense*).

8. We have (*love*, *affection*, *charity*) for the poor.

9. The horse is a (*household*, *domestic*) animal.

10. After the sermon the (*assembly*, *crowd*, *congregation*) remained in the church for a special meeting.

33. SEWARD'S FOLLY

The purchase of Alaska by the United States from Russia for $7,200,000 in 1867 caused a storm of indignation and ridicule in this country. Nothing could be more foolish, it was said, than to pay out good American gold for a mass of glaciers and frozen waste as Alaska was then supposed to be. "Seward's Folly" became a by-word, but William H. Seward, who made the purchase, thought it the greatest public service of his career.

More than fifty years have passed and we can now judge whether the purchase was wise. Read what follows and make a list on paper of the reasons why you think Seward made a good bargain.

WHEN Alaska was purchased from Russia, it was considered by many to be a barren and worthless country; but we know now that vegetables and cereals can be grown along the coast in the summer months. The ocean winds bring rain and keep the temperature from extreme cold. The summer days are so long that the plants get much more sunshine every twenty-four hours than do the plants farther south in the same time. The winters are not colder along the coast than those in New England or in the state of Washington. Even in the mountains, where the temperature is very low in winter, the air is so dry that it does not seem cold. Recent explorations in the far North have shown that it is possible to live comfortably there if one knows how to do it.

Alaska has an area of 586,400 square miles. It extends east and west, including the Aleutian Islands, more than 5100 miles. This area is as great as that of all the states east of the Mississippi. The population is now between 50,000 and 60,000, about half of whom are natives.

Alaska has great mountain ranges which offer remarkable scenery but have caused great hardship for those who have had to seek a way through the high passes. Mount McKinley rises 20,300 feet above sea level. The Yukon, which is 1500 miles long, is the principal river.

Not long after the purchase of Alaska, gold was discovered, and in time this led to exploration and settlement of the territory. More than forty times the purchase price has been taken out of the land in gold alone.

In forty years the fur seals have yielded fifty million dollars. These fur seals are now protected with great care by the United States government. They live on four barren islands in the Bering Sea. They are watched and counted nearly as carefully as if they were human beings. This is because they were threatened with total destruction at one time by those who hunted them for the pelts. The number has increased in the last years, so that there are now perhaps 500,000 in all.

The return from fishing has been greater than from any other source. In some years the return has been as high as sixty million dollars. The yield of the copper

mines is greater than that of the gold mines. The copper deposits are probably the richest and most extensive in the world, great enough to furnish the world's entire supply.

Recently coal has been discovered, but as yet it is mined for local use only. It is reported by the government survey as lying in seven veins, one above another, 250 ft. deep. There are 150,000,000,000 tons at the very least, more than the original supply of Pennsylvania, and there is probably much still undiscovered.

Besides these resources, there are large deposits of tin, lead, zinc, sulphur, and silver. Petroleum is probably there also, and enormous water power can be developed from the swift mountain streams, when means of transporting it to distant fields are found. The forests of spruce, containing single trees six feet in diameter and two hundred feet high, offer another resource of great value for shipbuilding and for the paper industry.

Our government is now trying not only to make money, but to make life worth living for the native Indians and Eskimos. Schools have been established with teachers from the states. Reindeer have been brought from Siberia, to feed on the grassy plains. These have increased in number very rapidly, and when the natives have learned to care for them, they are given a number of animals to start a herd for themselves. This industry will develop a great meat supply

for the United States, as the area for grazing is very large.

In time a trip to Alaska will become a welcome vacation outing for many more of our people. The scenery along the coast has beauty and grandeur. The coast line is broken by deep ravines like the Norwegian fjords, and back of these rise glacier-covered mountains. The glaciers themselves cover a surface greater than all Switzerland. There are scores of peaks whose summits reach up two miles or more. The cold weather and deep snow offer winter sports. Travel across country is mostly by dog teams. There is room here for adventure in the open country.

Alaska is a great empire for the future, but its making is slow, because of the difficulty of building railroads to transport its products and because it is difficult to get men to live in the colder parts of the country, but Norway with fewer resources and no better climate has a population of 2,400,000 and an area one fourth as large.

What do you think of "Seward's Folly"?

34. OYSTER FARMING

"Oyster Farming" is a queer title for a story. Read the story to see what there is in it that is interesting. Read it as quickly as you can the first time, and read again the parts which especially interest you. Then be ready to tell the class what things are interesting to you.

IT sounds strange to speak of farming in the ocean, but there are many large oyster farms all along our coast. Some of these farms are covered by water all the time and some are uncovered when the tide is low. Oyster farms are often far more profitable than are those upon which corn and wheat are raised.

This is a new industry in our country because civilized people have not lived here very long, but it is a very old one in some parts of the world. As long ago as the seventh century a Roman knight raised oysters for the market, and it is said that the business made him very wealthy.

You will understand better about the cultivation of oysters if I tell you first how they live and grow in their natural homes. Except during the first few days of their lives, oysters are prisoners. They cannot move about freely from place to place as fishes and most animals can. They are attached to rocks, to the shells of their dead relatives, and to other objects. They grow in immense numbers, and they crowd one another more than people do in the tenement houses in our great cities. In fact most of them are soon crowded too much, and they die, leaving room for the rest to grow upon their empty homes. In this way the oyster beds spread out.

These oyster beds are not found in very deep water, but rather along the shore, generally near the mouth of some river. As I have told you, they often live where they are uncovered when the tide goes out. You can see from this that it is not difficult to gather oysters, so that, partly on this account, man has used them for food for ages.

When the Pilgrim Fathers landed on the shores of New England, they found that the Indians used oysters very commonly. All along the coast were great heaps of the shells. At the very first Thanksgiving dinner given in America oysters were served.

Oysters used to be so plentiful on these natural beds that they were very cheap. In some places where the winter weather was cold enough to freeze the water

along the shore, people cut holes in the ice and gathered them by means of long-handled rakes.

In a single year an oyster will produce millions of young ones. Just think of it. If all of this family grew up, they would fill a room fourteen feet in each dimension.

The young oysters are very small. They are called spat. Most of them are drifted away by waves and currents, or devoured by larger sea animals. The few that escape soon attach themselves to some object, so getting a chance to begin the battle of life.

If oysters are caught at all times of the year, it does not give them a chance to produce their young, and this, as well as catching the young ones themselves, has destroyed many of the natural beds. In order to keep up the supply of this food men commenced oyster farming. You see how our daily needs and desires lead to the establishment of great industries.

The oyster farmer prepares his farm in various ways. He places clean oyster shells, stones, trays, bundles of sticks, and other things on the bottom so that the oysters may find something to which to attach themselves. Then he places the young oysters or spat on these objects. When trays are used, several are placed one upon another and bound together by means of a chain. These trays are taken up from time to time in order to gather the oysters that are ready for market.

Shells are used more commonly than other things.

They are taken from the restaurants and hotels to the farms in boat loads, to be scattered over the bottom.

The young oysters grow at very different rates. In two years they may grow to be six inches in length, or it may take several years for them to reach that size. They grow more rapidly on the artificial beds, and are better in quality also. The starfish is one of the worst enemies of the oysters, for it destroys large numbers of them every year.

During the fishing season the oyster men go to the beds in their boats and scoop the oysters up from the bottom. This is called dredging. The scoops with their loads of oysters are drawn to the deck of the boat by machinery. Sometimes the oysters are gathered by means of long tongs.

As the oysters are usually in clusters, these have to be broken up. For this purpose a sort of hammer known as a culling iron is used. The oysters are broken apart and sorted. Sometimes the oyster man makes three grades and sometimes four.

Oysters are not the only things drawn up in the dredge. Starfish, lobsters, and various kinds of fishes are gathered in. The starfish are killed and the rest thrown back.

The oysters are heaped up in great piles on the deck. Sacks and barrels are filled with them, and many carloads are shipped daily from cities near the fishing grounds. Chesapeake Bay is the center of the oyster

industry in our country. There are oyster beds, however, all along both the Atlantic and the Pacific coasts.

Great quantities of oysters are canned near where they are caught. Getting them out of their shells is not an easy matter. For this purpose a knife is used. This work is called in the South "shucking oysters." Canning oysters is an important industry in the city of Baltimore. Have you ever seen cans of oysters that came from there?

— From *How We Are Fed*, by J. F. Chamberlain.[1]

[1] Reprinted by special arrangement with The Macmillan Company, publishers.

35. THE STORY OF KNITTING

We often need to read a selection rapidly, but we should never read so fast that we do not make an effort to get the meaning. Read this selection, therefore, rapidly but well.

Do not begin until you are told to do so by your teacher.

ON a cold winter day, there is nothing better than a woolen sweater, stockings, or mittens to keep one warm. We have often watched our mothers or grandmothers knitting such articles and have liked to think of the comfort they will give us.

Girls who lived as long ago as our Revolutionary War were taught when quite young to knit their own stockings and mittens. It was most unusual in those days to buy such articles at a store, because they were usually made at home by hand.

Knitting is not altogether work for women and girls. In some parts of Europe the old men of the poorer classes knit; and the Scotch shepherds, who had little to do while watching their flocks, spent their spare time in making stockings.

Knitting is very modern as compared with weaving. People knew little about it at the time of the discovery of America. For many years they made their stockings of skins and cloth, and we know that even Queen Elizabeth once wore cloth stockings.

It took so long to knit by hand that men soon began to invent machines to do this work. It was during the reign of Queen Elizabeth that William Lee noticed women knitting, and believed that he could make a machine to do the work much faster. With his first crude machine he made a pair of stockings for Queen Elizabeth, but she was disappointed because they were made of coarse worsted instead of silk. Then he improved his machine so that he might knit much finer. With this he made a pair of silk stockings for the Queen. She was much pleased and praised him for his ingenuity, but did not give him much encouragement. She said the use of these new machines would take work away from her poor subjects who were earning money by knitting stockings by hand.

But the use of Lee's invention spread in England, and from it have developed the wonderful and complicated knitting machines of to-day. Some of them are so complete and perfect that they do their work with almost no help from human hands. Knitting by hand, a person working steadily can turn out one stocking a day, but a modern stocking machine will make a hundred pairs in the same length of time. Now there are great factories in this country and Europe which knit not only stockings, mittens, and caps, but all sorts of underwear, jerseys, sweaters, and garments of almost every description.

36. WISE BIRDS

The men and women of India have retold this folk tale for many generations. Find out what its meaning is. Then see how many things in life you can list where this truth applies.

THE man who lived in the forest came out into the tall grass and hid himself. Then he whistled the call of the quails. From all over India they came flying and gathered in the grass about him. When they were quiet, the man threw his net over them. They struggled but could not get away. But as he was putting them into his basket one flew from his hand. The rest he took into the town and sold.

But the one that had escaped was very wise. He called about him all the quails that were left in the land. They settled about their leader and listened.

"Brother Quails," he said, "many of our family have been caught in the fowler's net. But I have thought of a good plan. When the man throws the net over us, all of us must lift it and fly with it to the nearest thorn bush. We will leave the net on the thorns and fly away."

The next day the fowler came again, and hid in the grass. At his call came all the quails left in India. "What a fine catch," he thought as he threw the net over them. But instead of screaming and tumbling

about, the quails flew away together, pulling the net from his hands, and leaving it tangled in the thorn bush.

It was late at night before he had untangled the net and gone home to his wife. She was very angry because he did not bring home any money and nagged at him till the poor man hid in the corner and said: "The quails have learned to work together. They fly away with my net and leave it tangled in the thorn bush. You cannot have any more money until the quails begin to quarrel again. Then I can catch them."

Not long after that one of the quails was boasting. By accident he stepped on another one's head.

"Who stepped on my head?" the other cried angrily.

"I did, but I didn't mean to."

"Yes, you did, you braggart!" And he kept on quarreling till all the quails were angry.

Then the fowler saw them fighting and threw his net over them.

"Now let us lift the net," the leader cried.

"Lift it yourself," another answered.

"You always make us do all the work," came from another.

And while they were arguing the fowler stuffed them into his basket and took them to town, where he sold them for a good price.

37. IN THE LAND OF COFFEE

Many books use short headings at the side or at the beginning of each paragraph to assist the reader to get the thought quickly.

This story about rubber has in it many details. It is important to select from each paragraph the main thought so that you will not be confused. In the first paragraph you will find such a thought given in the heading, "We get our coffee from Brazil." Read the paragraph and see if you think this is the most important thought. Perhaps you will think of another good heading. It should be expressed in a short sentence.

Now read the second paragraph. This has the heading, "The ride to the plantations is through a strange country." This heading has reference to the palms, the corkscrew trees, the matted vines, and the groves of tropical trees.

Now try to make a heading for the third paragraph, and write it on a sheet of paper after the number 3. It will take considerable study. In the same way prepare headings for each of the other numbered paragraphs.

When you have finished, you will have a brief outline of the selection which will be a summary of the whole, and which will help you to recall many of the details.

1. We get our coffee from Brazil.—Brazil produces more then two thirds of all the coffee used by man. This very morning there are millions of people in the United States who have had a cup of Brazilian coffee with their breakfast. We are great coffee drinkers and we ought to know about this part of South America, for most of our coffee comes from there, and we are the chief customer Brazil has for this crop. Coffee grows

best in a very mild climate. The plants cannot endure frost, but at the same time they must not be spoiled by too much heat. The best coffee regions are on the highlands near the city of São Paulo (souN pou'lo͞o) in the southern part of Brazil. They lie several hundred miles back from the coast in a country which is gently rolling, like some parts of the United States. The plantations there cover but a small part of the land. All together, they are not equal to half the size of the state of Massachusetts; nevertheless, they support more than seven hundred million coffee trees, and produce enough each year to give every man, woman, and child on the earth one pound of coffee and leave some to spare.

2. **The ride to the plantations is through a strange country.** — But let us take the train at São Paulo and go to see the big coffee estates. Some of the largest are so far away from the city that it takes us almost a day to reach them by rail. We ride through rolling plains covered with grass, pass clumps of palms, and then go on through forests of hardwoods, the trunks of which are twisted about like corkscrews. The trees are bound together in a mat by the long vines and creepers which hang down from their branches. Now we pass a banana plantation, and now lemon and orange trees in the gardens by the side of the road.

3. —— This part of Brazil has not had rain for some weeks. A cool wind is blowing and the air from the

plowed fields is loaded with dust. The boys who peddle fruit at the stations are covered with dust, and we find ourselves sneezing as it gets into our noses. What queer dust it is! It is as red as a brick and it turns everything red. We are soon like so many Sioux Indians, our collars are red streaks around our dusty red necks, and our coats look as if they were sprinkled with red pepper. There is red on the fences and on the trees and bushes. We see wide streaks of deep red cutting through the reddish green grass. Those streaks are the roads, for the ground under the sod is the color of brick. This red land is the famous coffee soil of Brazil. Its color comes from the iron mixed with the soil, and the redder it is, the better the soil is thought to be for the raising of coffee.

4. —— The plantations begin about fifty miles from São Paulo, and from there we ride all day among hills covered with coffee trees. Most of the crop is grown upon large estates. The one we visit has about five million trees and is the largest coffee plantation of the world. It is so large that we could not go around the outside of it in a day, if we began walking when the sun rose and kept on steadily until dark. Railroad tracks have been built upon it from the factories to all parts of the estate, and we are carried from field to field on one of the little steam engines kept for hauling the crops.

5. —— The ride is a beautiful one. About us as far as our eyes can see there is nothing but coffee bushes.

The whole land is covered with a mantle of green, striped here and there with bright red roads. The bushes are set out in regular rows and extend on and on, until they lose themselves in the sky at the tops of the hills in the distance. As we go on we can see the plants in their different stages of growth. In some fields they are not so high as our knees, and in others they are three times as high as our heads. Here, men are plowing the fields, driving carefully between the green plants and turning up the red soil. There, boys are down on their knees pulling the weeds; farther on laborers are laying out new rows among the stumps of the freshly cleared lands, while others are setting out young coffee plants.

6. —— Five thousand people are kept busy on this plantation raising the crop and preparing it for the market, and we shall learn that a great deal of work is required to produce the cup of coffee we have at breakfast. In the first place let me tell you what coffee beans are. You have seen in grocery stores the ground powder and the green and brown coffee beans from which it is made. These coffee beans are far different from the coffee berries when picked from the trees. The beans are the seeds of the berries. The berries look like dark red cherries, and are about the size of marbles. They hang in clusters close to the limbs among the green leaves. In each berry are two seeds, which form the coffee of commerce. There are smaller

cherries at the ends of the branches. Some of these have only one round seed inside them. Those seeds are sold as mocha coffee, although the real mocha is supposed to come from Arabia.

7. —— How the seeds are gotten out we shall see later. Out here in the fields we must learn how the bushes are grown. In the first place, the land must be cleared and made fit for the crop. The beans to be sown are selected as carefully as the boys of our corn clubs select seed corn. They are first planted in seed beds, where they soon sprout and little green plants shoot up through the soil. After a few months they have grown a foot high. They are now ready for transplanting to the fields. The plants are set deep in the ground. A little basin is dug for each one, and at first sticks or leaves are spread over it to protect it from the hot rays of the sun. It is carefully hoed to keep down the weeds, and at the age of four years it begins to bear fruit. A good tree should produce three or four pounds of coffee a year, and in the rich coffee lands of southern Brazil a tree may bear crops for thirty years or more. The coffee begins to blossom in December, and in April or May the berries are ripe and the picking begins. Hundreds of men, women, and children may then be seen moving among the bushes, picking the ripe red berries in baskets, and carrying them to the cars which are to take them to the factories on the plantation.

8. —— Let us see how the seeds are extracted. There

are some berries which have just come in from the fields. Take up one and look at it. It looks like a cherry and is almost as soft. Just inside the skin is a pulp and within this are two half-round coffee beans with their flat sides touching each other. Take out the seeds. They are white, not green like the coffee of commerce. Bite one of them and you will find that it has two skins. The outer one is white and hard and tough, and the inner is as thin as the thinnest of fine tissue paper. The outer skin is called the parchment skin and the inner the silver skin, for it is much like silver spun out like a cobweb. Both these skins must be taken off before the coffee can be sent to our markets. The first thing to be done is to get rid of the pulp. For this purpose the berries are thrown into a hopper, and run through machines that mash the pulp without hurting the seeds. By these machines the berries are reduced to a mush of pulp and seeds. The mush is now carried over a long copper cylinder in which

Coffee Berries

there are hundreds of holes, each big enough for a coffee bean to pass through. As the mush falls upon the cylinder, the beans drop through the holes and are carried into a little canal, from which they float off in great vats. They are next scoured clean in a tank in which a screw moves round and round among the beans, leaving them at the end as white as snow. The next process is drying. The beans are spread out upon platforms and left in the sun for several weeks until they have become as dry as a bone. They are carefully watched at this time and covered at night and when it rains to keep them from getting wet. Men stir them with wooden rakes so that they may be evenly dried.

9. —— This requires great care, but it is by no means all that must be done before the coffee is ready for sale. Each little bean must be undressed, as it were. Its parchment coat and its silver-skin underclothes must be taken off so that it may be sent to market in its clean olive-green. To do this the beans are thrown into machines that break the skins. They are next run through fanning mills by which the skins are blown out in the form of chaff, and the coffee seeds run out by themselves.

10. —— The seeds are of different sizes, some large and some small, some round and some almost flat. They must be graded before they are ready for shipment. This is done by passing them over a series of sieves in which are holes of different sizes, so that

the beans of each size flow out through different pipes into bags ready to be shipped to the markets.

11. —— We spend some time in going about among the laborers on the estate. Many of them are Italians, and not a few come over the ocean only for a season, going back when the coffee is picked.

12. —— The plantation is carefully managed. It has its overseers and its bookkeepers, who try to see that nothing goes to waste. There is a large store where the laborers can buy food, and the plantation has its own bakery, foundry, and sawmill. It is, indeed, a little world of its own, which has grown up here in the heart of South America to produce the coffee we drink at our meals.

— Adapted by permission from *New Geographical Reader, South America*, by Frank G. Carpenter.[1]

[1] Copyright, 1899, 1912, 1915, 1921, by the author.

38. THE CONQUEST OF MEXICO

You probably know the story of the European explorers who discovered our country. This selection will tell you the story of the European who first explored Mexico, and of the wonderful experiences he had.

After you have finished reading, make a list of the important facts that you think it worth while to remember. You might begin like this:

1. Why Cortes went to Mexico.
2. How he was first received.

In preparing this outline of facts, you may need to reread many parts of the selection.

OF all the Spaniards who went to the New World none met with more thrilling adventures, saw more wonderful sights, or made greater conquests than Hernando Cortes. Many of his experiences are told in the long messages which he sent back to the Emperor Charles V. Much is also told in the diary of a soldier in his army, named Bernal Diaz, who wrote down an account of what he saw and did on his campaign with Cortes.

Hernando Cortes was at this time (about 1519) a gay and spirited young nobleman, handsome, graceful, and affable. He had early tired of his own country, and when he was but nineteen had left it to go out to the Spanish settlement in the West Indies in search of wealth and adventure. While he was acting as assist-

ant to the Spanish governor in the island of Cuba, news was brought of the discovery of a great country to the west. Gold had been found in it and Indians, called Aztecs, who knew how to build houses of stone and mortar, to weave cloth, and to make ornaments of gold and silver. This country was Mexico, and the news of it so aroused the interest of the governor of Cuba that he at once dispatched Cortes with ships and soldiers to take possession of it. This was just the sort of adventure that Cortes had been looking for. With a small army of about six hundred men, a few horses, and some cannon and ammunition, he set sail from Cuba in the year 1519 (the same year in which Magellan started upon his voyage around the world), and in due time reached the coast of Mexico.

As soon as he landed he was visited by envoys from Montezuma, the most powerful ruler among the Aztecs, who sent to inquire why these foreigners had appeared in his country. With the envoys came painters, who made pictures of the Spaniards and their doings to carry back to the king. Most surprising to the Aztecs were the horses and cannon, things which had never before been seen in their land.

Cortes announced to them through his interpreter, a beautiful and clever Mexican woman who had become deeply attached to him, that he had come as an ambassador from the Spanish emperor to visit their king. The Mexicans replied that no permission could be

granted him to see Montezuma. Cortes said that he would not leave the country until he had had an interview with him; but still the answer was the same — no foreigner could be allowed to approach the great Aztec ruler of Mexico.

Then Cortes made a momentous decision. Small as his following was and great as was the power of Montezuma, he resolved not to turn back until he had seen the king in his own capital and established himself in the country. He took possession, in the name of Charles V, of the strip of coast where he was encamped, and to make certain that there should be no retreating from his decision, he had all his ships destroyed. Then he set out for the capital.

This march to the city of Mexico led him through many towns and villages. Some of the people were hostile to Montezuma and welcomed Cortes gladly, hoping that he might free them from their enemy. Others were so loyal to the king that, although they also met Cortes with an appearance of hospitality and gave fair promises of helping him, they made every effort to destroy the Spanish army. When Cortes discovered the plans of these latter, he spared none that he could reach, slaying many and burning some alive.

Making his way thus through the country, Cortes and his army came at last within sight of the city of Mexico, built partly on an island and partly over the waters of the lake. The soldier Diaz says in his diary that when

they saw all the towers and temples, made of solid masonry, yet rising from the water and reflected in it like enchanted castles, they looked at one another in amazement, asking if these things that they saw were not a dream rather than reality. Everywhere were flowering gardens and blooming terraces, and even floating rose gardens; and in the distance, encircling the city and its surrounding villages and the wide green plains in which they were set, was range after range of misty blue mountains.

As Cortes and his army, with their prancing horses, drew nearer to the city, Montezuma himself, splendidly adorned with gold and jewels, came out with a magnificent procession to meet them, along the wide causeway that led over the waters of the lake. The two leaders saluted one another with much ceremony, and Cortes was presented with a rich necklace by the king and gave him one in return. Then all, both Mexicans and Spaniards, returned over the causeway into the city, where quarters were assigned the Spaniards in one of the king's palaces.

Here the invaders were nobly entertained by Montezuma and taken to see the sights of the Aztec capital. The vast market place aroused their wonder. It was larger than any they had ever seen, and displayed the greatest variety of merchandise. There were food and clothing of many kinds, wines, medicines, and perfumes, chairs, tables, and beds, fine pottery, beautifully

wrought ornaments of gold and silver, and designs of bright-colored feathers woven so skillfully that they looked like paintings. There were painters' materials, and even paper. These were used for making pictures, for the Aztecs' writing was still in the stage called *hieroglyphic;* that is, they had no alphabet, but expressed themselves by means of pictures.

In every interview between the two leaders Montezuma displayed dignity and graciousness. Even when Cortes took his final daring step and demanded that the monarch should surrender himself because his subjects had slain some Spaniards, the courteous demeanor of the Aztec king was unchanged. When he recovered from his amazement he replied: "I am not one of those persons who are put in prison. Even if I were to consent, my subjects would never permit it."

But such were the audacity and the decision of Cortes that Montezuma was forced to yield and was taken to the Spanish quarters. His arrest terrified his subjects beyond words. When at last they became rebellious against their new masters, Montezuma himself attempted to pacify them, and in one of the struggles between the Spaniards and the Aztecs he received his death wound. The gentle monarch had made such an impression even upon his captors that when he died they were sincerely sorry; "and no wonder," wrote Diaz, "seeing that he was so good."

His death inspired the Aztecs with such fury against

the Spaniards that Cortes was forced to retreat from the city. He then made an alliance with a tribe hostile to the city of Mexico and laid siege to the town, determined to fight out the war to the finish. In this long struggle, in which the Spanish were finally victorious, the Aztecs fought with desperate and unfailing courage, but their fair temples, palaces, and courts were all brought to utter ruin and the whole place was laid waste, while the loss of both Spanish and Aztec soldiers was past reckoning.

Cortes now gave all his attention to the rebuilding of the city, and to filling it with his own men and with those who had been his allies during the war. At the same time he allowed the conquered people to hold their old positions as far as possible and treated them with great consideration. He set up chapels in order that the Christian religion might be established in the country, and before long a new town had arisen, though it was far from approaching in beauty the old Aztec city of Montezuma. The whole country was finally conquered in the name of Charles V, and remained a rich and valuable possession of Spain for three centuries.

— From *An Introduction to American History*, by A. M. Atkinson.[1]

[1] Reprinted through courtesy of Ginn and Company.

39. TRY THIS GAME

Playing a game which includes all the class is a good test of the right kind of class spirit. The selfish pupil who wishes to play his own game or to be captain all the time is soon found, and so is the lazy pupil who will not work hard to be ready for a game which is fun for the rest. The player who does not know the rules hurts the game, but the one who knows the rules and breaks them is worse. It is part of the business of every class to manage and to help such players.

Read the directions carefully and play the game. Walk through one game to be sure all know what to do.

TWO bean bags are needed. The class is divided into two teams of equal numbers, and the players of each team stand in a straight line facing in the same direction. The players at each end of each line move one step to the right, and face each other. The player at the head who has stepped out of line takes a bag and at the signal runs toward the player at the foot of his line. While he is running, the players in the line move forward one step. When the runner is near, he tosses the bag to the player at the foot and then takes the place of this player. The player catching the bag at the foot steps into line and passes the bag forward to the next in line, each player passing it rapidly to the one in front until it reaches the head of the line, where a player has stepped out to take the place of the runner. The bag is tossed to him by the

player behind and he runs with it as before, tossing it to the first runner who is now at the foot of the line.

The play is continued until each player regains his original position and the one who was the first runner is again the runner. He raises the bag in the air as soon as he receives it to show that his side has completed the play. The side wins whose leader first succeeds in raising the bag in the air at his original position.

The bag, if dropped, must be picked up by the player who dropped it.

Choose a leader for each side, an umpire to decide disputes, and a scorekeeper.

QUESTIONS

In playing a game the following questions arose. How would you answer them? Write the numbers of the questions and your answers on a sheet of paper.

1. Is it fair for one side to have one more player than the other side?

2. While running with the ball, a boy drops it and another player picks it up and hands it to him. Is this fair?

3. Two pupils have time enough to prepare for the game but delay their preparation until all the rest are ready. The umpire decides that the game shall be played without them. Is this fair?

4. Instead of being passed to each player on the way to the boy at the head of the line, the bag is thrown past three players to him. The other side finished last, but the umpire decides that it has won. Is this right?

40. WHERE SALT COMES FROM

In this article disregard everything which does not help you to answer this question: *Where does salt come from?*

Find as many sources as you can, and after writing out the answers close your book and wait for the discussion by the class.

THE Arab, journeying over the yellow sands, riding upon the back of his faithful "ship of the desert," often looks longingly for some sign of water to cool his parched lips. The sailor may ride upon the beautiful blue waters of the ocean in his white-winged ship; but although there is nothing but water to greet his eyes, he cannot drink it, for it is bitter to the taste.

If you were to place a quantity of ocean water over a fire and evaporate it, a white substance would remain. Most of this is common salt. You see that it is as necessary to provide fresh water when one wishes to cross the ocean as it is if one is going to cross the desert.

As most streams and lakes contain fresh water, you will wonder why the waters of the ocean are briny. The rocks and soil of the earth contain salt, and the streams wash it from the land. Each one carries so little that we do not notice it, but through the long past each has carried a great amount to the sea. None of it can escape, so the ocean gets more and more briny.

No healthy person would ever think of eating salt alone as a food, and yet our food would taste very

unsatisfactory without it. Farmers supply their cattle and horses with salt, and wild animals search for it in the forests, and lick it from the soil with their tongues.

Salt is so important to us that I want to tell you about some of the ways in which men obtain it.

Sometimes sea water is placed in great vats and evaporated. This leaves the salt, which is then refined. You know that the sun's heat causes the waters of a shallow pond to evaporate during warm weather. Shallow basins are often scooped out along the coast, and the waters which fill them are then shut off from the larger body. In time the water evaporates, and the salt, which has formed in thin layers, is collected.

I said that most lakes are fresh-water bodies. There are some, however, that are very salty. Great Salt Lake is one of these. Streams flow into it, but none flow out. If you were to bathe in this lake, you would find that your body would not readily sink.

I have seen great piles of glistening salt along the shore of Great Salt Lake which had been obtained by evaporation. A railroad runs beside the lake and the salt is loaded upon the cars to be hauled away. When the people first settled in Utah, they used to drive to the lake in wagons to get a supply of salt.

In the western part of New York, at some distance below the surface of the earth, there is a thick layer of salt. Wells are drilled down to this; water is pumped into them, and then pumped out again as brine. This

brine is evaporated in large pans made of iron, two quarts of brine yielding about a pound of salt.

In China salt has been obtained in this way for hundreds and even thousands of years. Though they had little machinery to work with in those days, yet by patient, steady effort, they drilled wells two thousand and even three thousand feet in depth. From twenty-five to forty years were required to drill some of these wells. Those who commenced them knew that they were not likely to enjoy the fruits of their labor and that others must get the benefit of what they did. What does this show about these people? What benefits are you receiving from what others have done?

Salt is also mined as coal and iron are. This is called rock salt. It is obtained in Germany, Poland, Austria, India, and the United States.

One of the most interesting salt fields of the world is in the southeastern part of California. It is on the Colorado Desert, near the Colorado River. This was once a part of the ocean floor and the rocks contain much salt. Water seeping through the earth dissolves the salt and brings it to the surface at this place. What happens to the water?

This salt field covers an area of about one thousand acres, to a depth of from one to eight inches. It looks more like a field of snow and ice than one of salt. The bright sunlight is reflected from its surface with such power that it hurts one's eyes.

A great plow drawn by a steam engine moves over this dazzling field, and throws the salt in furrows. It is then piled up, loaded on cars, and taken to sheds, where it is purified. Indians and Japanese do most of the work.

In order to purify the brines, they are boiled in iron pans and treated in various ways to make them fit for table use. When evaporation is rapid the salt crystals are quite small, but slower evaporation produces larger ones. Rock salt is dissolved in water and then evaporated. To get the finest salt, the crystals must be ground. When salt is to be used for other purposes than to season food, not so much pains are taken. Name other uses of salt.

In olden times, when salt was not so easily obtained as it is to-day, it was regarded in some countries as a luxury. This seems strange, does it not? At one time the Chinese made it into little cakes, stamped the image of the emperor upon it, and used it as money. In Arabia those who ate together food which had been salted, believed that this established a special bond of friendship between them. This led to the old saying, "There is salt between us."

— From *How We Are Fed*, by J. F. Chamberlain.[1]

[1] Reprinted by special arrangement with The Macmillan Company, publishers.

41. LACE

We often need to read a selection rapidly, but we should never read so fast that we do not make an effort to get the meaning. Read this selection, therefore, rapidly but well.

Do not begin until you are told to do so by your teacher.

LACE is a very important part of a woman's dress. To be sure it is not important because of its warmth, but because it makes her clothes more beautiful.

Lace making is an important industry in Europe. If you were a little girl in some parts of Europe, you might even learn to make lace in school.

Lace is in great demand for use in artistic effects. All the beautiful handmade needle-point and pillow lace made by more than a million of women and girls all over the world is soon taken up for this purpose, also the great quantities of imitations of both these laces that are made by steam driven machinery.

Without a pattern or design, the fabric of lace cannot be made. Books of patterns began to be published in Venice not long after the time when Columbus discovered America. These designs were not such that they could be worked by little girls. In fact, before the beginning of the year 1600, some of the designs for lace fabrics were so elaborate that it was not until a hundred

years later that lace makers arose who could be expected to undertake the work.

In north Italy and Flanders, the art of pictures first flourished. It is worthy of note that these two widely distant regions are just the places where lace making first became an industry. This is true both from an artistic and from a commercial point of view.

Let us now see if we can understand how lace is made by hand. There are two kinds, needle-point and pillow lace. Needle-point is made with a needle and a single thread. The pattern is drawn on paper and stitched to a piece of heavy linen for the purpose of holding it straight. Threads, sometimes three or four in number, are then laid on the lines of the pattern, and are lightly fastened through to the linen. The entire figure is then worked out, and when it is completed the stitches holding it to the linen are cut and the lace comes off.

In pillow lace, the design is drawn on stiff paper which is carefully stretched over a pillow, a round board stuffed to form a cushion, and placed on the knees of the worker. The pattern is outlined by sticking pins at close intervals along the drawing. Around these pins threads wound on bobbins of various sizes are twisted and crossed to form the various meshes and openings. Needle-point lace is the heavier lace and looks stronger, but pillow lace is much softer.

42. DOGS OF THE WORLD WAR

Dogs, as well as our soldiers, did their bit during the World War. This article will tell you how they helped to win the war. Read carefully and —

1. Write the three qualities which by careful training made dogs useful in the World War.

2. Make a list of six kinds of service that dogs performed during the World War.

If you cannot answer these questions after reading the selection once carefully, refer to it again.

WHO does not love dogs? Who can read the stories of their wonderful devotion without a feeling of love and respect?

It does not matter what kind of dog you take, whether the little Fox Terrier or the great Mastiff, whether the poor homeless mongrel or the well-bred and well-cared-for dog such as you see at the dog shows — it is all the same. Show him kindness and affection and he is your friend as long as you both may live, and if occasion called for it, would willingly give up his life to help you. Even abuse will not drive him from you, once he is your friend.

I know of a man who runs a sawmill in a distant state. He owned a beautiful and intelligent hunting dog of

which he was very fond and to which he gave good care usually; but when he was angry, as he sometimes was, he would beat the dog. One day a man told him that the dog had killed a sheep. He tied the dog to a tree and beat him as only a wicked, angry man could. Then he untied the dog and stepped back, but his foot slipped and he fell into the mill-pond. He could not swim and surely would have drowned if the faithful dog, bleeding and sore as he was, had not leaped at once into the water and brought the man safely out. Later, he found that his dog was not the one that had killed the sheep. It is said that the man cried when this was told to him and vowed that never again would he strike the dog.

As you know, there are many, many kinds of dogs, great and small, from the Saint Bernard weighing two hundred and fifty or three hundred pounds to the tiny Yorkshire Terrier that weighs less than one pound. They are black and white and brown and gray and mouse-color, with all sorts of shades and mixtures. Some have long, heavy hair, some have short hair, and some have no hair at all. To whatever part of the world you may go, there you will find dogs each adapted to its own country. They will differ in size, color, and in other ways; but under all these differences they are the same in nature — kind, obedient, grateful, and affectionate.

Dogs were among the first animals that came to

live on friendly terms with man, and now they love him better than they love each other, even, and are never happy when separated from their masters. They make the best playmates and companions, and they are useful in many ways. In all the countries of the world they are used in hunting and as watch dogs. In Belgium, dogs are hitched to light carts for hauling milk, vegetables, fruit, and other things, both in cities and in the country. In northern Canada, sledges drawn by dogs are the only means of transportation during the long winter. Peary could never have reached the North Pole without their help. In the Alps many a person lost in a storm has owed his life to some noble dog trained in the work of rescue. In New York and many other cities police dogs do good work in capturing criminals.

It is not surprising, therefore, that dogs were used in many ways in the World War.

Belgium was the first to make use of them in hauling machine guns and in carrying food and ammunition to different parts of the country. France soon saw their value and began to use them to a greater extent than did any other country. The French set up recruiting stations for them as they had done for soldiers, and then sent them to regular training camps, where they sometimes remained for months before they went into active service. You must not think that dogs did the many wonderful things they did in the war simply

because they happened to be there. Young dogs were carefully selected and trained for the different kinds of work they were to do, just as the men were selected and trained for what they were to do. The training was based on the dog's three strongest points, intelligence, devotion, and keen sense of smell.

Some dogs, chiefly Airedales and Collies, were trained for sentinel duty. With the man on guard, such a dog would stand for hours at a listening-post, watchful and attending strictly to business. Many a time it was his keen nose or ear that first detected the approach of the enemy. Of course on such an occasion most dogs would bark with all their might, but that is just what the sentinel dog was trained not to do. Instead, he would only wag his tail anxiously, or possibly give a low whine — too low for the enemy to hear. On a lonely watch, in the dark of the night, with the enemy perhaps close at hand, what a comfort the dog must have been to the man on guard!

Another duty for which dogs were trained and in which they did great work was to carry messages to the front or to other places under fire. When the telephone wires were broken, when neither horses nor men were able to get through with messages, then the faithful dog was called into service. A message would be tied to his collar and he would be turned loose to find his master, who was already at the front or wherever it was necessary that the message should go. There

were many of these dogs, each with a different master; and each master was in a different important place in the battlefield. When a message was to be sent, it was necessary to use the dog whose master was at the place where the message was to go. The dogs were trained to find their masters, no matter where they might be or what obstacles had to be overcome. The instant they were set loose, they would dash off on this errand. Guided only by their wonderful power of scent, more wonderful than we can understand, amid fire and exploding shells, into any part of the battlefield they would go. Nothing would turn them aside and nothing but death would stop them until the master was found. Thus messages of the utmost importance were delivered in the most critical times. Some dogs were killed or mortally wounded when engaged in this duty, and sometimes a dog would drop from exhaustion when he had found the object of his search.

Another service performed by dogs was the carrying of supplies to men in dangerous places, over stretches of ground that could not be crossed by motor cars or horses or even men. Being small, swift, and certain, dogs came to be relied upon for such work and were as much a part of the army as were the men. Special harnesses were made for them with a pouch on each side in which to carry food, ammunition, or whatever was wanted. Imagine the welcome a dog would receive when he came galloping up to a squad of hungry

men with cans of hot soup, or perhaps with ammunition which they were badly needing!

In parts of the battle front, soldiers needed to be stationed on high mountains. There in the bitter cold, with deep snow covering all roads and trails, men and horses often for weeks at a time could not carry the needed supplies. So sledge dogs were brought from Alaska and Canada to do this work. Once after a heavy snowfall, when the roads were blocked to horses, one hundred and fifty dogs in four days hauled more than fifty tons of food and other supplies from a valley to the mountain high above it. In the last year of the war more than a thousand sledge dogs were engaged in such work.

The dogs trained by the Red Cross to search for wounded soldiers on the battlefield deserve very great credit. As in the other lines of work, special training had to be given them before they could do what was wanted. They were taught to jump or climb over walls and fences, and to crouch as they ran about under fire. Some of these dogs could get over a fence eight feet high. Each carried a first-aid kit, and to this food and medicine many a soldier owed his life. The Red Cross dogs were taught to pay no attention to a dead man, and to bark only when they found a wounded soldier who could not move or speak. They were also taught to tear away some part of the unconscious man's clothing and take it back, thus show-

ing that he was in need of help. And then the dog would lead the stretcher bearers to the spot where the wounded man lay.

A French scout tells of lying in a thicket terribly wounded, unable to help himself in any way. He had called for help, but there was no one to hear him. As it grew dark, he gave up all hope and turned his head to die, when suddenly he saw two fiery eyes above him. He thought it was a wolf, and fainted. It was not a wolf but a Red Cross dog which was there to help him. The dog tore one glove from the man's hand and hurried away. When the scout came to his senses, he was on a stretcher being carried to safety while the dog that had saved him was trotting on behind.

There were many dogs in the trenches, and they shared all the dangers and hardships of the men, even to going over the top. One dog rushed alone into No Man's Land and dragged his master, left there for dead, back to the trenches. Another found his master buried by a shell explosion, dug him partly out, and stayed by him for three days and nights, until they were rescued. One sheep dog is said to have been the means of rescuing one hundred wounded men. So many stories are told of the wonderful deeds of these dogs of war that the French have printed a book called the *Golden Book of Dogs*, which is made up of such as these.

It is no wonder that the war dogs of all kinds were

greatly prized and that everything possible was done for their comfort. Special hospitals were provided for them, and from doctors and nurses they received the same care as did the soldiers. Some of them were cited for bravery and won medals for distinguished service. One of these brave fellows was given a dinner of honor by several of his officer friends.

And now one wonders what became of them all. When the World War was ended, nearly ten thousand dogs were deprived of the work which they had learned to like. A few were kept with the small armies that remained in time of peace. A few others became the companions and guides of blind soldiers. But we may be sure that most of them were scattered to all parts of the world, along with the masters whom they loved, to be cared for and loved in return to the end of their days.

43. WHAT WOULD YOU DO IF LOST?

Being lost in the woods is not pleasant, and with care it can be avoided. If you will read these suggestions and are able to answer the questions at the end, you ought to be able to save yourself.

NO sensible person would tramp in wild country without knife, ax, and matches, or flint and steel. If you have these, you need not worry about being lost for you can care for yourself until you are out of the woods. In any case, stop the moment you think you are lost and look about you well. Note the landmarks the courses of the streams and the hills. If there is some one who will hunt you up, stay where you are. Make a fire with plenty of smoke. Shout every half hour. Build a shelter if night is coming on. Make yourself as comfortable as you can and wait for some one to find you. There are so many edible roots and plants that you need not starve for weeks. Crawfish can be found in nearly all our streams. These can be caught with the hands by turning over stones along the shore. They make good food when roasted. No harm can come to you if you keep your head. Once you lose it, your troubles begin. A man out grouse hunting only a mile or two from town walked for three days, most of the time in sight of his own ranch. Had he walked down hill for two or three

hours, he would have found a settlement. All this time he had three grouse in his pockets though he had eaten nothing. His fear had mastered him.

But suppose you have to get out by yourself. The best direction to follow is usually to go downstream, following the water courses, because these always lead in time to settlements. Climbing a mountain or a hill is not usually a help, for the country does not look the same from a hill top, and you have exhausted yourself by climbing.

Another wise thing to do is to follow your back track. If there is snow on the ground, this will be easy. Although you have turned as you traveled, the scenery will not be strange.

A compass will help if you know the direction which you should follow. Sometimes men have become so confused that they would not follow the compass. That sounds very foolish, but it is the result of fear and excitement. Keep cool.

QUESTIONS

1. What can one do to keep from being lost?
2. What is the worst thing about being lost?
3. If you know some one will come to find you, what will you do?
4. What can you do to get out yourself?

44. WHAT THE FOREST DOES FOR THE SOIL

In order to understand and remember the valuable information of this article, it will be helpful for you to make an outline. Such an outline will have not only main topics, but some of the main topics will have subtopics. The main topics of this selection are as follows:

I. How soil is like a savings bank.

II. How trees get food from the soil.

A.

B.

III. How dead leaves and branches of trees improve the soil.

A.

B.

C.

D.

IV. How nature makes old fields fertile again.

A.

B.

C.

After you have read the selection carefully, copy the outline on paper; and then after studying the article again fill in as many subtopics under II, III, and IV as you think are necessary.

EVERY plant does something to the soil in which it grows. It takes something out of the soil and gives something back to it. The soil is like a savings bank. Some people put in money every week, and take out very little; and the bank takes care of the money and adds to it, so that the longer a man leaves his

money with the banker, the more he gets. Then, some day he can take out more money than he has put in, for the money itself has been earning a little all the time, and this little is added to the whole amount. Year by year the savings increase. If a boy two years old were to begin now and put one cent a day in the savings bank until he came of age, he would have a hundred dollars, provided he drew no money out.

Now, the forest is all the time taking a little store from the soil, but it is every year putting more into it than it takes out. All through the long summer the roots of the trees are taking water from the soil and carrying it up to the leaves.

The water is never pure but always contains certain things that the plants live upon. If you drop a lump of sugar into water, the lump soon disappears, but the water tastes sweet. The water has taken up the sugar. In the same way while the water is in the ground it takes up certain things from the soil which it carries into the plant. We think spring water pure, because it is clear, but clear spring water contains all the food that many plants need.

The trees that grow in the forest where the wind cannot blow the leaves away act just like other plants — their roots absorb water from the soil, and this water contains different things that the trees must have for food; but such very small portions are dissolved in the water that it tastes pure to us. Spring water

contains a great many things, all mixed together, and all necessary for the plants. Here are some of the things contained in spring water that plants must have in their food: oxygen, hydrogen, nitrogen, potassium, phosphorus, iron, chlorine, calcium, and magnesium. You need not learn these names. They are used here just to show you how many different things spring water may contain when we think it is perfectly pure.

The water that enters the plant thus carries food, and the plant thrives on it, just as we grow by what we eat.

Every year the forest returns to the soil all the leaves that grew during the season and a great many twigs and limbs that have died for various reasons. Down in the ground a great many roots also die every year. The forest covers the ground so densely that the wind cannot blow the fallen leaves away, and the shade of the trees keeps the ground much more moist than it would be if the trees were wide apart, as in an orchard. So the leaves, twigs, and dead limbs lying on the moist soil soon decay, and most of the matter they are made of burns up and passes into the air. The burning is so very slow that there is neither smoke nor flame. We are apt to think that there can be no burning unless there is fire, but the fact is that the change which takes place in the dead leaves that fall from the trees is a very slow burning. It takes several years for a single crop of leaves to burn in this way; while a fire lighted to the leaves would burn throughout the forest in a

very few hours. But such rapid burning leaves only ashes, and ashes do not improve the soil so much as do leaves and twigs and fruit which rot slowly and become mixed with the soil itself. We call the decaying wood and leaves *humus*, and it is the best gift the forest can make to the soil. It is a good plant food. It holds water like a sponge. It lets air into the soil when mixed with it. It prevents the rapid drying of the soil. All these things are good for the plants that the farmer grows, and so the forest helps not only the soil but it helps the farmer also.

It takes a great many years for the humus to form on the floor of the forest. Every leaf helps, but each leaf is so small that all the leaves that grow in fifty years or more are needed to make humus enough to improve the soil of a field.

A farmer can supply as much plant food to the soil, in the form of manure, in a single winter as a forest might give in fifty years; but a great many farmers do not put manure in their fields at all. They plant crops in the fields year after year, and the crops yield less and less, until the soil does not produce enough to pay for working it. Then the farmer quits and lets nature care for the land.

What does nature do with an old field? By bad work on the part of the farmer the loam has become washed away and the clay subsoil shows here and there in the field. The crops have taken so much of the

plant food out of the soil that even the weeds do not grow well in it. But hardly any soil is too poor for some kind of weed to live in it, even though the growth is poor.

So the first few years after a field is abandoned there is a growth of poor weeds, each one of which is helping the soil a little. Every weed that grows, no matter how bad it may be for our crops, earns its right to live by doing what it can to make the soil better; and in old fields, where nothing else will grow, the weeds are very useful to the owner of the land.

After a while there will appear among the weeds a few woody plants, such as greenbrier and blackberry and sassafras, and each one of these helps to make the soil better not only by the fall and decay of its own leaves, but also by making lodging places for the dead weed leaves, so that the wind cannot blow them away.

If we go away for fifteen or twenty years, and then return, we shall hardly know the old field, for it will be covered over with young trees of many kinds. Pine and cedar, tulip and ash, maple and cherry — a great many trees — will be found in the field, and only in a few places can we see the bare soil Almost everywhere the trees and bushes will cover the land, and every one of them will be at work making the land better by shedding its yearly crop of leaves and twigs. All the time the trees will be getting bigger and bigger. In fifty years quite good-sized trees will stand in the

field, making a young forest; and in a hundred years or more fine timber can be cut from the old field, and the land will be so rich that it will again produce good crops.

But a hundred years is a long time to wait for the forest to enrich our poor soil. The better way is not to allow our crops to rob the soil. Let us every year put just a little more plant food into the soil than the crops take out. Then, if we look carefully after a few other things, our fields will never be worn out, but will become better year by year.

In the Middle West, where the forest only borders the streams, or where no trees grow, it takes much longer for nature to restore fertility to a worn-out field because there the ground cover is only weeds and grasses, and humus forms very slowly.

— From *Nature Studies on the Farm*, by Charles A. Keffer.[1]

Define these words by their context:

absorb humus abandoned

[1] Copyright, 1907, by the author.

45. GETTING THE MEANING OF WORDS

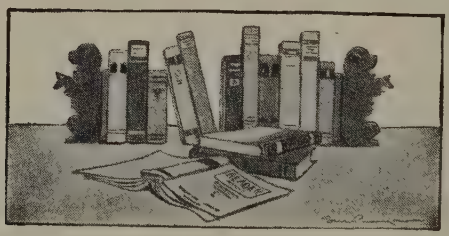
When you are reading you sometimes come to a word whose meaning you do not know. Then it is often best to decide from its relation to the other words what it probably means and go on.

To show you how you can guess meanings, some words are left out of this exercise. Where they should be, there are parentheses with numbers. Read the paragraphs and see if the meaning is fairly clear. Then go back and choose a word for each number, writing it down opposite the number on a sheet of paper. When all the class have finished, read the paragraphs with your words put into the blanks. It will be worth while to compare your words with those chosen by others.

THE British (1) in full uniform, and in regular order as if they were to drill before the king, marched straight on in (2) array. Washington thought it was the most (3) show he had ever seen; but he said to the general: "Do not let the soldiers march into the woods like that. The Frenchmen and the Indians may even now be (4) behind the trees, ready to shoot us down. Let me send men ahead to see where they are, and let some of our Virginians who are used to fighting in the forest go before to (5) them away." But General Braddock told him to mind his own business, and marched on as (6) as ever.

Suddenly, just as they reached a narrow part of the road, where the woods were all about them, the Frenchmen and Indians who were (7) for them behind the

great trees suddenly opened fire upon the British troops, and there came just such a (8) time as Washington had feared. But even now Braddock would not give in. His soldiers must fight as they had been drilled to fight in Europe; and when the Virginians who were with him tried to fight as they had been (9) to, he called them (10) and ordered them to form in line.



46. RUBBER

Write on paper the names of as many articles made of rubber as you can think of in the next three minutes. The three-minute period begins now, and this is a race with your neighbors.

You can see from your lists that rubber is very important. If you work on your lists for a day, they will be much longer. Now rubber comes to us all made up into articles for our use. Don't you think it would be worth while to stop and ask questions about it? What would you like to know about rubber? Make up a list of questions, as good ones as you can, and then read this article to see if you can get the answers.

RUBBER was not known to white men until after the discovery of America. We hear of it first at the time of the second voyage of Columbus, when he found the natives of some of the West Indies playing with rubber balls. It was Priestley, the chemist, who in 1770 first showed that rubber would erase pencil marks.

Rubber was first brought to the United States in the year 1800, and about fifty years later a Boston sea captain returned from Brazil with five hundred pairs of rubber boots made by the natives. They were sold for three dollars and upwards a pair, but it was not until many years later, after Charles Goodyear had discovered how to vulcanize rubber, that waterproof boots and shoes came into common use.

To-day rubber is one of the most important of all the raw materials used by man. It keeps us dry in wet

weather. It cushions the wheels on which we ride in bicycles, motorcycles, and automobiles; and most of our heavy hauling in cities is done by trucks whose tires are of solid rubber. It is used in making airplanes, the wheels upon which they start and land having rubber tires. We wade through the water in rubber boots, and race horses are shod with rubber shoes. Rubber in one form or another is employed in many kinds of machinery. It is found in some of the buttons with which we fasten our clothes, and in the suspenders and garters which hold up our trousers and stockings. During one year the school children in the city of New York used more than ten thousand pounds of rubber ink erasers. Millions of elastic bands are used every year in our business cities. There are so many uses for rubber that great factories have grown up to make goods of this material, and we have one large city, Akron, Ohio, which makes more rubber goods than anything else.

For a long time almost all the rubber used by man came from the wild trees of the Amazon valley, although some rubber was gathered from the tropical forests of Africa and other parts of the world. About 1900 men began to plant rubber trees and cultivate them in Ceylon and on the Malay peninsula, and now by far the greater part of the world's supply of rubber comes from there. Still, it is said that the very best of rubber is that from the forests of the Amazon basin.

Rubber is made from the milky juice in the bark of a wild tree found scattered through the forests of the Amazon basin. The rubber district is as large as the United States east of the Mississippi River. It includes parts of Brazil, Peru, and Bolivia, extending from the mouth of the Amazon westward to the foothills of the Andes.

The rubber tree flourishes best in land that is flooded part of the year. Ground that is always above water will not do for it. The best conditions are found in the lands south of the Amazon and on the islands and lowlands not far from its mouth. Here a tree requires from fifteen to twenty years' growth before it will produce enough rubber to pay for tapping it. The rubber tree bears a fruit consisting of a shell, inside which are three little nuts. When the fruit is ripe the shell bursts with a noise like a firecracker and throws the nuts to some distance. So many nuts come from each tree that it is said a man could easily gather enough in one day to plant a hundred acres of land. When planted these seeds grow rapidly. The little trees must be shaded from the direct rays of the sun and must have plenty of moisture. After a time they can be transplanted, and if the soil and climate are right they will thrive without cultivation.

But we shall see these trees better by visiting one of the islands where they grow wild in the forest. At Pará, the great rubber-shipping port of Brazil, we take a

steam launch and ride all night on the Amazon. How bright the stars are and how the moon shines here in the soft air of the tropics! Our hammocks are slung from the roof of the boat, and as we lie in them the warm wind from the ocean fans us to sleep. We spend hours passing through one narrow channel after another, and in the morning find ourselves at anchor before the house of a rubber planter. A little wharf extends from his front door to the river, and we step out of the boat within a few yards of the house. It is a low, one-story building roofed with red tiles and surrounded by a wide veranda. At one end is a store-room filled with groceries and dry goods, which the planter sells to his rubber gatherers, and on the veranda are piles of what look like smoked hams but are really lumps of rubber ready for market. The planter gives us a breakfast of coffee and rolls, after which we walk with him through the dense forest, winding this way and that from one rubber tree to another.

How interesting it is and how different from what we imagined! We have heard of rubber groves and rubber forests. There is no such thing in nature. The trees that grow wild are widely scattered. They are so far apart that each man has to walk several miles in gathering the saplike juice for one day. He has his own trees to attend, and they may range from sixty to one hundred and fifty in number, according to the distance between them. The trees assigned him are called a

path or road. The size of a rubber plantation is estimated by the number of roads it contains. The roads are mere footpaths from one rubber tree to another.

We are winding our way along such a path now. Let us stop at one of the trees and look at it. It is not at all like the rubber plants we have in our hothouses. They have lean stems and thick leaves of polished green. This rubber tree has a trunk as big around as your waist. It is a great forest tree with leaves somewhat like those of the English ash.

How smooth the bark is! It is of a whitish gray, and at a distance of twelve feet above the ground it shines almost like silver. Farther down it is scarred, black, and warty, with streaks of yellow matter that looks much like beeswax here and there in the bark. Take out your knife and dig up a bit of the wax so that you can catch hold of it. Now pull at it. It will stretch from six to twelve inches from the tree before it comes off. This is coarse rubber the remains of the juice that has dried on the tree. It will all be pulled out and saved, although it will be sold at a lower price than the better varieties that we shall see made later on.

But here comes the rubber gatherer to tap the tree for the day. He has a little tomahawk, or hatchet, the blade of which is just about an inch wide, and a lot of tin cups the size of egg cups. With the hatchet he makes a gash in the bark just deep enough to go through without cutting the wood. As he pulls back the hatchet

a white fluid begins to ooze out in drops. It is just like milk and makes us think of the juice of the milkweed. The man takes one of the little tin cups and fastens it into the bark just under the gash so that the milk drops down into the cup. He now makes two or three other gashes in the tree, fitting each gash with its cup, and then goes on to the next. He continues his work until every tree in his path has been tapped.

The proprietor shows us how slowly the milk runs and says that only a few spoonfuls can be gathered from each tree in a day It flows best in the morning, and about noon the rubber man comes back to gather the milk in a gourd or bucket. The amount collected varies according to the richness of the trees, but if a man can get two quarts of milk in one day from his path he thinks he has done very well.

The next process is to turn the milk into the rubber of commerce. This is important. Upon exposure to the air the milk becomes hard, and if not properly treated turns to coarse rubber, which brings only low prices. The fine rubber is cured by smoking, the best coming from milk smoked only a few hours after it is gathered. Our planter makes fine rubber, and he sees that his men cure it as soon as they return from the forest.

There goes a man now with a bucket containing two quarts of the liquid rubber that he has just brought from the trees. Let us follow him and see the process of

curing. We go with him to an open shed and watch him pour the milk into a bowl as large as those we use in mixing bread. See how white the juice is! It tastes sweet and is so thin that one could easily drink it.

Now the man stoops and builds a fire of palm nuts in one corner of the hut under a clay chimney raised a little from the floor. The chimney is so short that the top of it does not reach to our waists. See how the nuts burn, and watch that dense smoke which pours out.

But look! The man has taken a long paddle and thrust the end of it into the milk. It comes out as white as snow. Some milk has stuck to the paddle. He now thrusts the end of the paddle into the smoke, twisting it rapidly as he does so, so that no drop of the precious juice may fall into the fire.

As the smoke touches it, the rubber thickens and hardens, and the white is streaked with brown by the smoke. It has soon coated the paddle like varnish. The paddle is again thrust into the milk bowl, and when it comes out there is a fresh coat of rubber on it ready for smoking. This is hardened in the same way and the work goes on until a mass of rubber as large as a small ham is built up on the end of the paddle. Then the man takes a knife and makes a cut in one side. He pulls off the rubber and carries it to the house, where it is piled up for shipment to factories all over the world.

— Adapted from *New Geographical Reader, South America*, by Frank G. Carpenter.[1]

[1] Copyright, 1899, 1912, 1915, 1921, by the author.

47. STRANGE METHODS OF FISHING

It is important to learn to read rapidly, but it is more important to learn to read well. A pupil who can read both rapidly and well has the most important tool that the school can give. Wait for your teacher's suggestions before you begin to read.

THE Japanese and Chinese are great fish eaters. One reason for this is that there are so many different varieties of fish in those countries that a person may eat a different kind each day of the year. The waters are filled with fish, not only the sea, but the rivers and even the canals. Almost every one is a fisherman, and there are so many fish traps and nets along the inland waters that boats often have difficulty in passing by. If you should go along the rivers, you would probably see people using nets and many other methods of fishing with which you are familiar.

You would also see some strange methods of catching fish. The Chinese train otters to get fish for them. The otter is an animal that lives almost exclusively upon fish. It is about three feet long and weighs about twenty pounds. It is an expert swimmer and diver, easily overtaking and seizing fish under water. It brings them to the shore to eat them. Sometimes it is trained to assist in fishing by driving the fish into nets. At other times it is taught to catch fish by being attached to a long cord and let down into the water.

Another unusual method of fishing is to use cormorants. These are birds about as large as ducks, but with large mouths and throats. They can dive quickly and swim under water so fast that few fish can escape them. The cormorant does not catch a fish by the tail, but swallows it head first so that the sharp fins will not hurt the bird's throat.

Of course these birds have to be trained to fish for their masters. Sometimes they are taken from their nests when young, but more often the eggs are taken and they are hatched under hens. The training begins when the birds are very young, and they are taught to go out to catch fish and to come back at the call of their master's whistle.

When the cormorant is working for its keeper, it has a strap tied around its neck just tight enough to keep it from swallowing its captives. When released, it at once dives and darts along the bottom as swiftly as an arrow, looking for its prey, rapidly scanning every hole and pool. It does not take long to dispose of its prize in its large throat as far as the strap will allow. Then it starts for another fish and keeps this up until it has all its large throat will hold. It then returns to its keeper, who has been anxiously waiting. The keeper makes it give up the fish stored in its throat. It may then be let loose again, and when the keeper thinks the bird has done enough work, it is fed.

48. HOW THE SPIDER BUILDS ITS WEB

Spiders have a bad name. They build webs in houses which catch the dust and annoy the housekeeper. We often kill spiders. But like many common things, if we can really study it, the spider is worth knowing. Read the story of his web and you will find yourself looking at the next web you see with new interest. You may even see this master worker, for she really is that, building her web. At first you will not see so much as the teller of this story, for it takes practice to see and understand as well as Fabre, who spent his whole life observing small insects.

THE smallest garden contains garden spiders, all clever weavers.

Let us go every evening from one border of the garden to the next. We may give ourselves a title, "Inspector of Spiders' Webs." There are not many people of this profession, and we shall not make any money by it. Never mind. We shall learn some very interesting things.

The spiders I watch are young ones, much slenderer than they will be in the late autumn. They work by day, work even in the sun, whereas the old ones work only at night.

Let us stop in front of this one, whom we surprise in the act of laying the foundation of her web. She runs about the hedge, from the tip of one branch to another, within the limits of some eighteen inches. Gradually, she puts a thread in position, drawing it from her body

with the combs attached to her hind legs. She comes and goes impetuously, as though at random; she goes up, comes down, goes up again, dives down again, and each time strengthens the joints with threads distributed here and there. The result is a sort of frame. The shapeless structure is what she wishes; it marks out a flat, free, perpendicular space. This is all that is necessary.

A special thread, the foundation of the stronger net which will be built later, is stretched across the flat frame. It can be told from the others because it is apart from the rest where no twig will interfere with its swinging length. It never fails to have in the middle a thick white point formed of a little silk cushion.

The time has come to weave the hunting snare. The spider starts from the center, which bears a white sign post, and, running along the cross thread, hurriedly reaches the irregular frame inclosing the free space. Still with the same irregular movement, she rushes from the outside to the center; she starts again backwards and forwards, makes for the right, the left, the top, the bottom; she hoists herself up, dives down, climbs up again, runs down and always returns to the central landmark by roads which slant in the most unexpected manner. Each time a spoke or radius is laid, here, there, or elsewhere, in what looks like mad disorder.

Any one looking at the finished web, so neat and regular in appearance, would think that the spider

laid the spokes in orderly fashion, one after the other. She does nothing of the sort, but she knows what she is about, all the same. After setting a few spokes in one direction, the spider runs across to the other side to draw some in the opposite direction. These sudden changes have a reason; they show us how clever the spider is in her business. If she began by laying all the spokes on one side, she would pull the web out of shape or even destroy it. She must put some on the other side to balance. She is past mistress of the art of rope-building, without serving an apprenticeship.

Now which of us would undertake, offhand, without much preliminary experiment, and without measuring instruments, to divide a circle into a given number of parts of equal width? The garden spider, though weighted with a wallet and tottering on threads shaken by the wind, performs the delicate division without stopping to think. She achieves it by a method which seems mad according to our methods of measurement. Out of disorder she brings order. How does this spider come to succeed with this difficult problem, so strangely managed? I am still asking myself the question.

The laying of the spokes is finished. The spider takes her place in the center, on the little cushion. Turning round and round, she describes a spiral line with very close coils. This is the center of the web, her resting floor.

Next, with a heavier thread she starts to connect the

spokes, moving from the center in a wider spiral until she has reached the outer edge of the web. At each point where she crosses a spoke she fastens her thread to it with a kind of glue. All this is but the foundation for the snaring web.

She now retraces her steps, laying a new spiral toward the center. But the new thread is of a different kind. This time it is all sticky. When I examine it under the microscope, I find that the tiny thread is hollow and filled with a glue intended to hold any unfortunate insect who falls or flies into the web. We see now that the spider seeks not only to entangle but to catch her prey with the sticky threads. Nevertheless, the spider is not caught by her own snare. Why?

For one thing, the resting floor is not sticky, as I find when I pass a straw over it. But sometimes the spider, when a victim is caught, perhaps at the very edge of the net, has to rush up quickly to bind it. She seems able to walk on the threads perfectly well then. I pull out the leg of a live spider and put it to soak for an hour in a mixture which would dissolve fat. Perhaps she oils her feet to keep them from sticking. When this washing is finished the leg sticks to the web. We see that the spider varnishes herself with a special sweat so as to go to any part of her web without difficulty.

This spiral thread of the spider's is very quick to absorb moisture. For this reason, when the web is

begun in the morning, it is not finished if the weather turns misty. The spider builds the general frame work, but she is very careful not to work at the sticky spiral, which, if soaked by the fog, would dissolve into sticky threads and lose its usefulness. The net will be finished to-morrow if the weather is right.

Then, too, what a passion the spider has for production. I calculated that, each time she remakes her web, she produces from twenty to thirty yards of gummy thread. Well, during two months, the spider remakes her web nearly every evening. During that time she made something like three quarters of a mile of this tubular thread, bulging with glue.

We cannot but wonder how she ever carries so much in her little body, how she manages to twist her silk into this tube, how she fills it with glue. I see the results, but I cannot understand the working of the factory.

— Adapted from *Insect Adventures*, by Henri Fabre.[1]

[1] Copyright, 1917, by Dodd, Mead, and Company, Inc.

49. GRENFELL, A HERO OF TO-DAY

Most of us like the hero of a great battle. Read this story of Grenfell, and see if he is really a conqueror and what he had to fight.

If you are interested, there are many other exciting stories about his life. One tells about his being lost at sea on an ice floe. Perhaps some of you can find this in some book and tell the class about it.

WHERE the bitter winds of the north Atlantic sweep over the coast of Labrador lies a country inhabited by very poor fisherfolk, who depend upon the scanty harvests gathered from the waters for their living. When the "catch" is poor there is much suffering, and the children are clothed and fed more poorly than usual. The warm, bright days are few; and there are no swimming holes or long, delightful summer vacations and picnics for boys and girls.

Far away in merry England under its soft and sunny skies, a boy was born in 1865 — Wilfred T. Grenfell. When he became a young medical student he heard Dwight L. Moody, the great American evangelist, so interpret the old, old story of Jesus in terms of loving service for others that he resolved to devote his life to the poor and desolate. With such a vision of love the young physician left his home and friends, and sailed away up into the North Sea among the poor fishermen, where there were no doctors to cure them or to set their broken bones when the cruel sea dashed them upon the rocks. Later, when others came to help, Doctor Grenfell decided to go where no one else cared to go. He again sailed away, this time to Labrador and the coast of Newfoundland. How cheerless and desolate that country appears, how far away from England and America! Think of the coldest day and bitterest storm you ever knew. That is what Doctor Grenfell found when he arrived there, all alone. There he has worked long and hard to make life happier and to help the poor Eskimos understand something of the unselfish love of the Christ-life, which is his ideal. He found them ignorant, poor, and miserable. When they were ill there was no one to help. When they fell over the mountain spurs and broke their bones, they must die or be crippled for life, for no one knew how to put the bones in place. Along three thousand miles of coast this good man goes in summer in his little steamboat,

fighting the cruel waves, dodging the icebergs, always in peril, but never caring as long as he can reach the sick and ease their pain and suffering. In winter the water is frozen, and he must take his long, perilous journey by sledge. With his teams of dogs hitched to his stout sledge "Lend-a-hand," he drives over those snow-covered fields where there are only tall poles set up to mark a trail, often being lost in the storms, or breaking through the ice into the waters of half-frozen streams, or being dashed over the side of the steep path, or being buried under an avalanche of snow from which he must dig himself and his dogs. But he is never discouraged. With a keen sense of humor he sees the funny side of things; and in those cheerless, miserable homes he laughs and tells his experiences, plays with the little ones, and makes every one around him happy. He is Santa Claus to the children, and Good Samaritan to the man by the wayside. Often "Lend-a-hand" is his only bed; for although the dogs are trained to watch for the poles set to mark the path, they sometimes miss them in the storm, and stray from the trail; and then Doctor Grenfell turns his sledge up on the side, digs a hole in the snow, lights a fire, and crawls into his sleeping bag and spends the night out of doors, while the dogs dig a place in the snow for themselves, to wait for the morning light to help them to find the lost trail. Through Doctor Grenfell's efforts a hospital has been erected on the coast, where trained physicians

and nurses care for the poor people who are shipwrecked or who can be taken away from their wretched homes to be cared for. Do you wonder that the people love this bright, cheerful Englishman, with the endurance of a man and the tenderness of a woman, who is translating his life into love, and trying to follow John Wesley's golden advice in the simple familiar lines?

Do all the good you can,
By all the means you can,
In all the ways you can,
In all the places you can,
At all the times you can,
To all the people you can,
As long as ever you can.

— From *World Stories Retold*, by W. J. Sly.[1]

[1] Used by permission of The Judson Press, owners of the copyright.

50. HIKING AND CAMPING

Do you know the rules which help to make hiking and camping expeditions a success? Just starting off enthusiastically sometimes may mean a most unhappy ending unless you plan well. Here are some suggestions. Read them over and see what you think of them. You might well ask yourself these questions when you are planning a trip.

1. What needs to be taken care of before you start on a hike or camping trip?
2. What should one especially look out for about walking?
3. Which recipes would you choose to use first?
4. What special suggestions do you expect to try when you hike next time?
5. Are handy articles for camp use worth making?
6. What is omitted which one should think about when planning a trip?

General Suggestions. First, avoid long distances. A foot-weary, muscle-tired and temper-tried, hungry group is surely not desirable. There are a lot of false notions about courage and bravery and grit that read well in print, but fail miserably in practice, and taking long hikes is one of the most glaring of these notions. Second, have a leader who will set a good, easy pace, say two or three miles an hour, prevent excessive water drinking, and assign the duties of pitching camp, etc. Third, observe these two rules given by an old woodsman: (1) never walk over anything you can walk around; (2) never step on a stone or log that you can

step over. Every time you step up on anything you lift the weight of your body. Why lift extra weight when tramping? Fourth, carry with you only the things absolutely needed, rolled in blankets, army style.

Before starting on a hike, study carefully the road maps, and take them with you for frequent reference. The best maps are those of the United States Geological Survey, costing ten cents each. These maps are published in atlas sheets, each sheet representing a small, quadrangular district. Send to the superintendent of documents at Washington, D.C., for a list.

For tramping you will need the right kind of a shoe, or the trip will be an unhappy failure. A light-soled or a light-built shoe is not suited for mountain work or even for an ordinary hike. The feet will blister and become "road-weary." The shoe must be neither too big, nor too small, nor too heavy, and must be amply broad to give the toes plenty of room. The shoe should be water-tight. A medium-weight, high-topped lace shoe is about right. Bathing the feet at the springs and streams along the road will be refreshing, if not indulged in too frequently.

It is well to carry a spare shirt hanging down the back with the sleeves tied around the neck. Change when the shirt you are wearing becomes too wet with perspiration.

The most practical and inexpensive pack is the one

made for the Boy Scouts of America. It is about 13 inches square, and 3 inches thick, made of waterproof canvas with shoulder straps and with double pouches, and will easily hold everything needed for a tramping trip.

A few simple remedies for bruises, cuts, etc., should be taken along by the leader. You may not need them and some may poke fun at them; but, as the old lady said, "You can't always sometimes tell." The amount and kind of provisions must be determined by the locality and habitation.

Handy Articles. A boy of ingenuity can make a number of convenient things. A good drinking cup may be made from a piece of bark cut in parallelogram shape, twisted into pyramid form, and fastened with a split stick. A flat piece of bark may serve as a plate. A pot lifter may be made from a green stick about 18 inches long, allowing a few inches of a stout branch to remain. By reversing the same kind of stick, and driving a small nail near the other end, or cutting a notch in it, it may be used to suspend a kettle over a fire. A novel candlestick is made by opening the blade of a knife and jabbing it into a tree; upon the other upturned blade put a candle. A green stick having a split which will hold a piece of bread or meat makes an excellent broiler. Don't pierce the bread or meat. Driving a good-sized stake into the ground at an angle of 45 degrees and cutting a notch on which you then may

suspend a kettle over a fire will provide a way of boiling water quickly.

Camp Cooking. The following tested recipes are given for those who go on hikes and over-night camps:

Griddlecakes

Beat one egg, one tablespoonful of sugar, one cup diluted condensed milk or new milk. Mix enough self-raising flour to make a thick cream batter. Grease the griddle with rind or slices of bacon for each batch of cakes. Be sure to have the griddle hot.

Bacon

Slice bacon quite thin; remove the rind, which makes slices curl up. Fry on griddle or put on a sharp end of a stick and hold over the hot coals, or better yet remove the griddle, and put on a clean, flat rock in its place. When it is hot lay the slices of bacon on the rock and broil. Keep turning so as to brown on both sides.

Canned Salmon on Fried Bread

Dip slices of stale bread into smoking hot lard. They will brown at once. Drain them. Heat a pint of salmon picked into flakes, season with salt and pepper and turn in a tablespoonful of melted butter. Heat in a pan. Stir in one egg, beaten light, with three tablespoonfuls evaporated milk not thinned. Pour the mixture on the fried bread.

Roast Potatoes

Wash and dry potatoes thoroughly, bury them deep in a good bed of coals, cover them with hot coals until well done. It will take about forty minutes for them to bake. Then pass a sharpened hard-wood sliver through them from end to end, and let the steam escape and use immediately, as a roast potato soon becomes soggy and bitter.

Baked Fresh Fish

Clean well. Small fish should be fried whole with the back bone severed to prevent curling up; large fish should be cut into pieces, and ribs loosened from back bone so as to lie flat in pan. Rub the pieces in corn meal or powdered crumbs, thinly and evenly (that browns them); fry in plenty of hot fat to a golden brown, sprinkling lightly with salt just as the color turns. If fish have not been wiped dry they will absorb too much grease. If the frying fat is not very hot when fish are put in, they will be soggy with it.

— H. W. Gibson in the *Boy Scout Manual.*[1]

[1] Reprinted by permission of the Boy Scouts of America.

51. HOW THE IROQUOIS INDIANS LIVED

We often need to tell others about a story we have read. If it is interesting, we like to tell others about it and perhaps try to get them to read it. Sometimes when we do this our friends do not appear interested. If the story is a good one, the reason lies in the way we tell them about it. The thoughts and the words we use are not attractive.

This is a story about Indians. Suppose you wished to write a letter to one of your friends, perhaps an absent member of the class, about it. You would take a sheet of paper and begin your letter in this way —

> DEAR JACK,
>
> I am going to tell you some of the things we read about Indians to-day. Do you know that as many as fifty Iroquois lived in one house? A little Indian girl, Star Flower, was very proud of her brave father.

These two thoughts are taken from the first two paragraphs of the story. Finish writing the letter, taking one thought, the largest and most interesting one, from each paragraph. Choose your words carefully, and try to give a good idea of the whole story.

When you have finished, look over your letter to see if you are ready to read it to the class.

THE Iroquois tribes lived in what is now New York state. As many as fifty families sometimes lived in one house. We have to-day, in our large cities, apartment houses in which fifty or more families live; but the Iroquois did not build their houses of

stone, floor upon floor, higher than the tree tops. They built long, low houses covered with bark. Within, a hallway extended the entire length of the house, and the space on each side was divided into compartments, one for each family. Every four families had a huge fireplace in the middle of the hall, in which to do the cooking. Thus, if twenty-eight families lived in one of the long houses, there would be seven of these fireplaces, and above each an opening in the roof to let out the smoke.

Let us look into one of these small Iroquois homes of long ago. Here lives little Star Flower. She is a very proud little girl, for her father lately has been elected war chief, a great honor in her tribe. In some other tribes a man is chief merely because his father was chief before him, but Star Flower's father was chosen for his bravery.

Full well does Star Flower know that her people, the Iroquois, are better than their neighbors. She has been told so over and over again ever since she was a baby. Her brother boasts of it, and her father says it proudly as he puts on his eagle feathers and war paint before a fight. Star Flower never tires of looking at the black spots on the feathers. These show the number of enemies her father has killed. Notches in the side of a feather show the number of scalps he has captured, and a feather split in the center means that he has been wounded.

While Star Flower was still a small girl a dreadful war broke out between her tribe and one of the hated Algonquin tribes. It was such a cruel war that Star Flower remembered it all her life. When an old woman, she told her grandchildren about it, to show how bitterly the Iroquois had always hated the Algonquins. The Algonquins started the war by sending the Iroquois chief a snakeskin filled with arrows. The response was war paint, tomahawk, bow and arrow, and a wild dash into the forest after the enemy. The young men rejoiced, for here was a chance to win scalps to be hung by the hair from their belts. To cut off the scalp of a fallen foe was difficult, for his friends would fight valiantly to prevent it. Some Indians believed that if a man's scalp was gone he could not enter the Indian heaven, the happy hunting ground where there was plenty of game to hunt and no work to do.

Nothing could be more cruel than the Indians' treatment of prisoners. Sometimes they lashed a prisoner to a tree and built a fire a few feet away. Gradually the fire was enlarged until the heat from it began to scorch the victim's flesh. Even then, the captive Indian scorned to let his tormentors see his suffering. He knew full well that if ever his tribe were victorious they would repay each cruelty with a greater one.

The Indian fighter generally stood behind trees or bushes. His deadly arrow would go hissing through the air and strike, but the shooter could nowhere be

seen. Some tribes dipped their arrow tips in poison, so that the wounds they made would be fatal.

When two hostile tribes had had enough of war, their chief men would meet and talk the matter over. If they finally decided that there should be no more fighting, a pipe of tobacco was brought and lighted. Silently taking a long puff, each brave would hand it to the next, who also smoked in silence. When the " pipe of peace " had been smoked, fighting would be stopped, at least for a time. A tomahawk was buried to show that the two tribes were friendly once more. To complete the treaty of peace, belts of wampum were exchanged.

Wampum was made of pieces of shining shell, strung, like beads, on strips of deerskin. With some Indians white beads meant peace, and black ones war or danger. Several strings woven together formed a strip which meant, " This belt preserves my word." Wampum often served the Indian for money. When one tribe wished to send a message to another, a belt of wampum had to accompany it, or the message would not be received.

Like other Indian braves, Star Flower's father went to war, made his canoe and his weapons, hunted wild animals, and fished. His squaw did her part of the work. It was she who planted corn and sometimes ground it between stones and made it into meal. She dug roots and carried water for the family needs. She

wove baskets and made the few dishes that the family used. The dishes were formed of clay and baked hard in the hot embers of the fire. The squaw tanned the skins of the animals which her lord brought home. Her needle was a fishbone, and for fine thread she used the inner bark of trees. For stronger thread she used the sinews of animals.

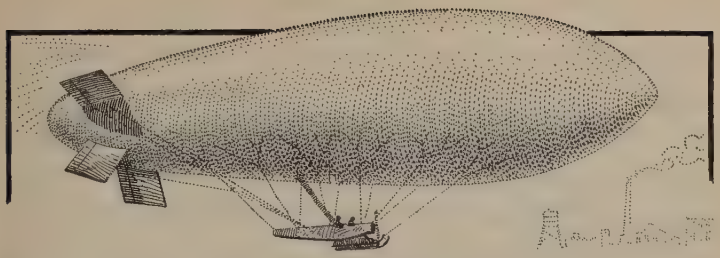
When some one died strange things were done. If it was a man of importance, the shrieking and wailing of the people could be heard a great distance away. They would tear out their hair by handfuls. They would cut their flesh and keep the wounds bleeding. The man's relatives would not eat until after he had been buried. At the grave his personal belongings, such as his bow and arrows, pipe, and tomahawk, were burned or were buried with him. His dog was put into the grave, too. A meal was prepared and left near by, for it was believed that he would need nourishment on his long journey to the happy hunting ground.

— Adapted from *American History, First Book*, by A. C. Perry and G. A. Price.[1]

Guess the meaning of these words:

compartments scorned nourishment

[1] Copyright, 1913, 1914, by the authors.



52. FINDING OUT ABOUT BALLOONS

If you wished to find out how a balloon is made, you would have to consult some one who knows or go to an encyclopedia. The latter method is a good way because the book account is usually written by an expert. Probably he may tell so much or tell it in such a way that the answer you wish is hard to find. It takes practice to get exactly the information we need in the shortest time.

Here are some questions about balloons. Read the first one and see how quickly you can find out what this account taken from an encyclopedia tells about it. Notice the headings in heavy type. Will they tell you where to look for certain facts? When you are sure you have found the answer to the first question, close your book. Compare the answer you have with those of other members of your class. Do the same with each question.

1. When were balloons first made?
2. How was it found that people could live far up in the air?
3. What gases are used to inflate ("blow up") a balloon?
4. What uses are made of balloons?

Balloons. From the earliest times man has known how to navigate the seas, but to navigate the air was a far more difficult problem, not solved for many centuries. Birds did it, even large and heavy birds; it

was, therefore, evident that the air could be made to support weight that was properly distributed and properly buoyed up, but the method was not apparent. That the ancients speculated on the subject may be seen from the legend of Dædalus and his son Icarus, and their attempted flight across the sea, but nothing practical was accomplished until toward the end of the eighteenth century, when the balloon was invented. A balloon is distinguished from an airship, or flying machine, the other modern air-navigating device, by the fact that the former uses gas or hot air to make it buoyant, while the latter depends on complicated machinery, and is heavier than air.

Historical. It is almost impossible, in a day when aircraft have become so common as to attract comparatively little attention, to realize the intense excitement that prevailed over the first successful balloon. It was an Englishman named Cavendish who first announced the principle that a bag of some light material filled with a gas lighter than air, preferably hydrogen, was certain to rise naturally. However, he made no attempt to prove his theory by an experiment; and it was left for two Frenchmen, the Montgolfier brothers, to carry out his principles. They read Cavendish's book, experimented on a small scale, and finally, on June 5, 1783, sent up a great sphere thirty-five feet in diameter. They did not use hydrogen to inflate their balloon, but hot air, obtained by burning damp straw

and wool in a little grate below the open mouth of the bag. Any child who has sent up paper balloons by burning alcohol on a sponge at their openings, knows exactly the principle on which this first big balloon was operated. It went up into the air over a mile, and came down safely; and the conquest of the air had begun.

Improvements. But the hot-air balloon had its disadvantages. When the air cooled, the balloon was bound to fall, and its time in the air could not be regulated; but a scientist of Paris, Professor Charles, in August, 1783, constructed a balloon which had practically all the features of a balloon of to-day. It was made of varnished silk, and was filled with hydrogen, which it had taken Professor Charles four days to produce by the slow methods then employed. Scores of thousands of people gathered to watch it as it rose over Paris, and for almost an hour it remained in view, about 3000 feet above the earth; but then it began to drift, and later came to earth fifteen miles away in a field, where it was torn to pieces by the terrified peasants. The next step was the sending up, in a car below the gas bag, of live passengers, — a fowl, a duck, and a sheep; and in November, 1783, two men ascended in a hot-air balloon to a height of 500 feet, and traveled for five miles before descending. As always when inventions are in progress, there were not lacking men who, through scientific interest or sheer love of adventure,

were willing to risk their lives in perilous balloon ascensions, and in 1785 two men crossed the English Channel from Dover to Calais.

Modern Balloons. Improvements continued to be made in details, though not in principle, until the balloon of to-day was evolved. This balloon consists of a bag of soft cloth, silk, woolen, or cotton, coated with rubber varnish and covered with a network of cords, to which the wicker car for passengers is attached. In the top is a valve for the escape of gas, operated by a cord which reaches into the car, and the bottom of the bag is left open. The gas most used is coal gas, which is far cheaper than hydrogen but not so entirely satisfactory because of its greater heaviness. A balloon which is to carry considerable weight must be large, and some with a diameter of 118 feet have been constructed.

Besides the human freight in the dangling car, the aeronaut has his instruments, thermometers and barometers for the reading of atmospheric conditions, and a quantity of ballast, usually in the form of sandbags, which may be thrown out when he wishes to rise to a greater height. By means of these and the valve he can control his ascent and descent, but that is all the guidance he can give; as to horizontal directions, the balloon must move "at the wind's will." Dirigible balloons or "guidable" balloons have been invented and have proved most useful, but on account of the

machinery necessary for their control they are classed rather as airships.

Uses of Balloons. The uses of these balloons which cannot be directed are of course limited; but they have been of value in the securing of scientific information as to air conditions. Since men cannot breathe if more than a certain distance above the earth, unlimited upward flights are impossible for manned balloons, but little ones of India-rubber have been sent up frequently to great heights, and the recording apparatus attached to them gives valuable information. The balloons themselves do not return to the earth, for the inner pressure explodes them in the thin upper atmosphere, but a parachute brings the instruments down in safety. In 1912 one of these sounding balloons, as they are called, which was sent up from Pavia, Italy, reached a height of 123,505 feet (nearly twenty-five miles) and brought back the information that at that great height the temperature was $-60°$, and the pressure of the air only $\frac{1}{250}$ of what it is at the earth's surface.

In warfare, balloons have been used in various ways. The besieged people of Paris, during the Franco-German War, in 1870–1871, conducted most of their communication with the outside world by means of them, and since that date every large country has had in its military service a balloon corps. It is not the freely moving balloon which is of use in military operations, but the

captive or anchored balloon. It is attached to a cable, by means of which its movements are controlled, and it floats above the field just high enough to make clear observation possible. The great usefulness of balloons in such operations was further demonstrated in the World War, which began in 1914; each nation used them as stationary observation stations, leaving them in the air but a few moments at a time, then hauling them down to positions of safety. For most uses of observation and scouting, however, airplanes have proved far more effective, for they can mount to great heights with observers and move with incredible swiftness.

Balloon Records. For half a century the altitude record for balloon ascents was that of Coxwell and Glaisher, who, in 1862, reached a height of almost six miles. In the rarefied upper air one of the aeronauts became unconscious, and the other nearly so; thirteen years later two men died in mid-air during ascensions in France. When two German aeronauts made an ascent in 1901 to a height of 35,600 feet (nearly seven miles), they carried with them oxygen for inhaling, and so reached earth in safety. Their record has not yet been broken. In 1895, Salomon August Andrée, a Swedish scientist, attempted to reach the North Pole in a balloon. Had he been successful he would have established the world's record not only in ballooning but in polar exploration and discovery. However, his

fate is unknown, for no word ever came from the expedition.

In long-distance balloon traveling the record was established in 1913, when one of the contestants for the James Gordon Bennett cup race sailed from Stuttgart, Germany, to the neighborhood of Moscow, a distance of $1361\frac{5}{8}$ miles. Every year competitions for this cup are held, the race starting in the country which won the cup the year before. Air-navigation by means of balloons has thus become a sport rather than a serious pursuit, and it seems unlikely that new uses for unguided balloons will ever be evolved.

— From *The World Book*.[1]

[1] Reprinted by courtesy of W. F. Quarrie and Company.

53. OIL WELLS

You can learn to read rapidly by definite practice. It will do you no good, however, to read fast unless you get the meaning of what you read.

Do not begin to read this selection until you are told to do so by your teacher.

IMAGINE, if you can, what this world would be like without gasoline, kerosene and most of our lubricating oils. There would be no automobiles or airplanes, and much of our machinery could not be run. Gasoline and lubricants are produced from an oil that is found far below the surface of the earth. This oil is called petroleum, and the name comes from two Latin words meaning rock oil, or oil from the rock.

Petroleum lies in beds of porous rock deep down in the earth. It is formed from the layers of decaying matter imprisoned deep in the earth. The pressure of water alone and the constant formation of more gas and oil from decaying matter forces the oil toward the surface, but this is checked by solid layers of rock. When wells are drilled into these oil-soaked strata, the oil and gas burst forth with a roar and send a fountain of oil often hundreds of feet into the air. It is no easy matter to check the flow of an oil gusher, and often much oil is wasted before the spouting well is brought under control. If the oil should catch fire,

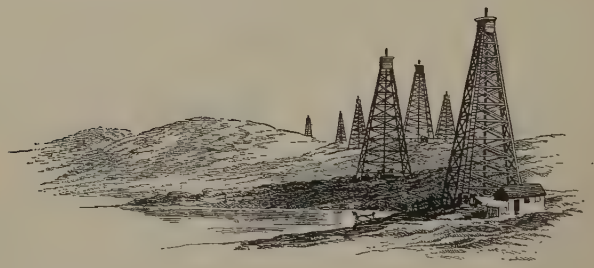
as occasionally happens, the well becomes a fountain of flames which may not be put out for several days or even weeks. The pressure on the oil in the wells varies in different localities, and in some places the oil even has to be pumped to the surface.

Men have known about petroleum since the earliest times. There were places where it was found in small quantities oozing out of the ground, or floating on the water of rivers and ponds. Marco Polo described oil springs that he saw in southern Russia over one thousand years ago. A Russian traveler writing about America in 1748 showed a map of the oil springs in Pennsylvania. This oil was in such small quantities that it was used chiefly as medicine. The Indians believed it was good for sore throat or for rheumatism.

In 1858 near Titusville, Pennsylvania, the first oil well was bored by Colonel Drake. He had noticed oil springs in the vicinity and thought that there must be a great quantity of oil below. When his well had been drilled to a depth of sixty-nine feet, the petroleum gushed forth at the rate of thirty-five barrels a day and, when other wells were sunk near by, more and more oil came forth.

Now that oil could be obtained in such large quantities, men began to find new uses for it. It was found to be such a valuable product of the earth, that they began to drill wells deeper and deeper. One well in West Virginia is more than a mile deep.

For ten years Pennsylvania was the one great oil producer of the world, but since 1870 the industry has spread all over the globe. The other states where we now find very large quantities of oil are California, Texas, and Oklahoma.



54. A GOOD GAME TO PLAY

This is a game that you can play in the classroom before school begins or whenever time can be found. Read the directions; see if you can answer the questions. Then play the game.

YOU will need a small ball of paper or worsted. Those who play are divided into two equal groups. All are seated at their desks Each group has a leader who stands before his group.

The side starting the game is given the small ball. At the command, "Pass," by the *opposing* captain, the players pass the ball from one to another rapidly. This should be done so that the opposing side does not see the ball. Each player makes the motion of passing so as to deceive the other side who are trying to tell where the ball is. Nobody can leave his seat and the captains must stay in their places.

After a short time of passing the same captain calls suddenly, "Hands up," and at once all passing must cease and all hands be raised in the air over the head with the fingers tightly closed so that the player who has the ball may not be found out.

Then the captain calls, " Hands down," and all hands are brought down and placed on the desk softly with the palms down. The player who has the ball tries of course to keep it covered.

The players in the other group who think they know where the ball is raise their hands. No player may speak unless called by his captain. When called he says, for example, " Under J's right hand." J raises his right hand and if the guess is wrong places that hand in his lap. No other player in the group moves a hand. If the ball is found under J's hand, then the other side gets as many points as there are hands left upon the desks. If the ball is not there, then other guesses are made in the same way until it is found.

After the ball is found it goes to the other side, who pass it in the same way. The captain of the first group passing then gives the commands.

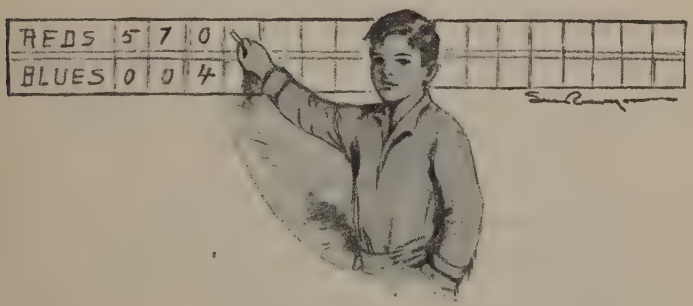
A side loses five points if any player talks without permission from his captain. Five points are lost if a player leaves his seat during the game, or breaks any other rule. The teacher should appoint an umpire to see that the rules are enforced. The umpire decides on the penalties. His decisions are to be fairly made and must be accepted while he is umpire. The umpire keeps the score. After the game he should be told by the group why he is a good or bad umpire.

The object of the game is to get one hundred points or whatever can be scored in the time allowed.

QUESTIONS

If you can answer these questions correctly, you will be ready to play the game. Write *yes* or *no* after the number of each question on a sheet of paper. Refer to the directions if you are not sure. Do it as quickly as you can.

1. Shall the passers keep the ball concealed?
2. Shall any player talk except when his captain lets him?
3. Do the guessers leave their seats to watch better?
4. Does the captain stay in front of his own group?
5. May a player take his hand from the desk except when he is told to do so?
6. Can the game be won with less than 100 points?
7. Do you lose ten points for talking?
8. Is anything said about dropping the ball?
9. May you criticize the umpire during the game?
10. May you pass the ball after the captain says, "Hands up"?



55. THE INCA KINGS

Why should you read about the Inca kings? There are no Inca kings now and have not been for a very long time. We read about them despite this fact because their story is one of the most interesting in history.

You will find in this account of the Inca kings many facts. Some are more important than others. Perhaps it will help you in reading to keep these questions in mind.

1. Why were the Inca kings good rulers?
2. Did the kings do anything we could well copy to-day?
3. How do you feel about the killing of the king?

Put down on paper in a very brief form the answers to these questions.

WHEN the Spanish explorers under the leadership of Pizarro reached the western coast of South America in 1532, they found the country inhabited by a very powerful race of people. These people had conquered a large number of tribes and nations, and built up a great kingdom extending from Ecuador on the north to central Chile on the south. The Spaniards had expected to see wild and savage tribes, but they found a great Indian race with a well-established government, laws, drilled armies, great forts and temples, and a highly developed religion.

It is remarkable that such a vigorous people were found in a country so much of which is near the equator, where the heat saps one's energy. The physical features of the land are a partial explanation of this

fact. Most of the country is a high table-land or plateau which is formed by the Andes mountains that run north and south along the coast on an average of only sixty miles from the ocean. Even in the tropics a cool climate may be found where there are mountains and plateaus. The cold of high elevations even in tropical regions may be as intense as is the heat of the lowlands. Between these extremes the Indians had found a moderate temperature. Life in such a high-land region may be easy, but never so easy as to make men lazy.

These Inca Indians whom Pizarro found were remarkable in many ways, but perhaps most of all for the way in which they adapted themselves to the country in which they lived. It is so dry on the table-land where they lived that, although some things would grow without irrigation, the best crops could be attained only where water was applied to the land. The Inca kings were very intelligent men and taught their people how best to conduct the water along canals to their fields of millet and corn. These canals consisted of large slabs of stone nicely fitted together without cement and they carried sufficient quantity of water to moisten the lands in the lower level through which they passed. Some of these were of great length.

The greatest care was taken that every occupant of the land through which these canals passed should enjoy the benefit of them. The quantity of water allotted

to each farmer was prescribed by law, and royal overseers superintended the distribution of the water and saw that it was faithfully applied to the irrigation of the ground.

These Indians showed a similar spirit of enterprise in their schemes for cultivating the land in the mountainous parts of the country. As many of the hills were too steep to be tilled, the Indians cut terraces so as to make level pieces of ground that could be planted. Here they raised a variety of crops.

The same spirit of economy prompted them to make fruitful the parts of the country where the soil was naturally dry. In these places they dug great pits until they came to a level of soil that had natural moisture. Some of these pits were more than an acre in extent and were sunk to a depth of fifteen or twenty feet.

With such patient toil these people combated the natural obstacles that faced them. Without the use of tools or the machinery familiar to civilized people, each individual could have done little; but acting in large masses and under the direction of intelligent kings they were able to achieve results that seem remarkable.

In other ways these kings were very helpful to their people. They sent intelligent men throughout their kingdom to find out for what products each particular part was best suited. If they found a place where ignorant people were growing potatoes and where corn would grow much better, they made them grow corn

instead, and then exchange what they would not need for the potatoes grown somewhere else. They also organized great agricultural exhibits similar to our county fairs, where the farmers came together and gathered ideas from one another's work. In this way they organized their subjects into a great family in which each group worked for the good of all people. If the crops failed in one place on account of lack of water the people whose crops were good had to give up a part of their harvest to the poor.

The kings also helped trade. They urged the people of the mountains to visit the people of the valleys and plains and exchange the wool and meat of their flocks for the dried fruit and grains of the farms in the valleys. They were very careful in taxing the people to make them pay only what was fair and what they could easily give. The men who grew potatoes sent a part of their crop as taxes to the central government at Cuzco; those who kept flocks of sheep or llamas sent wool; those who grew corn sent corn. In this way the taxes were easily collected, for no man felt that his tax was a burden. These taxes were set aside for the support of the religious temples, for the king, and a part of them for the people themselves. A certain portion of the products of the country were gathered in great stone storehouses placed in different parts of the country. These supplies of all kinds, including food, made famine impossible. Everybody had to work, as laziness was

not tolerated. The kind of work that each man should do was carefully planned by the king's ministers and he could not escape doing his share of work for the common good. As no man could become rich in this country, it is equally true that no one was poor, for poverty was carefully avoided by the king and his ministers.

The religion of the Inca Indians was a natural growth from the conditions under which they lived. Religion was a very important part of their life and they paid a great deal of attention to its rites. The great central object of worship was the sun, which was regarded as the source of all life. In a peculiar manner it presided over the destinies of man; gave light and warmth to the nations, and life to the vegetable world. They revered the sun as the father of their royal dynasty and founder of their empire. Temples were built in each city and almost every village throughout the land, and their altars smoked continuously with burnt offerings. The most renowned of these temples and the wonder of the entire empire was the Cuzco. The walls were built of massive stone and the interior was wonderful. It was literally a mine of gold. On the western wall there was a representation of the deity engraved upon a massive plate of gold of enormous size thickly powdered with emeralds and precious stones. It was so situated that the rays of the morning sun fell directly upon it at its rising, lighting up the whole interior with a wonderful glow.

The fortifications of Cuzco, their capital city, were very impressive. They were built of stones of vast size, so carefully fitted together that it was impossible to introduce the blade of a knife between them. Some of these stones were thirty-eight feet long, eighteen feet wide, and six feet thick. We are filled with astonishment when we consider that these enormous masses were hewn from their native bed and fashioned into shape by people ignorant of the use of iron, that they were brought distances of forty miles without the aid of beasts of burden, and were carried across rivers and ravines, and raised to elevated positions.

Four great roads led from Cuzco to the four parts of the Inca kingdom. They were made very carefully. In places they were cut in rock and other places they were graded and smooth. Where roads passed through the desert and might be hidden at times by shifting sands, the Indians erected poles or piles of stones to mark the way. Over some of the largest streams it was necessary to construct suspension bridges which were made by weaving together the tough fibers of bushes that grew in the country. Some of these bridges were as much as two hundred feet in length.

The royal highways were used by the kings in administering their kingdom. Over them the kings traveled in royal fashion to different parts of the country so as to become better acquainted with the people. The king on such a trip always let the people

know that he was interested in the welfare of all the men in all parts of his country. He even went to the seat of war when it became necessary to encourage the armies to better fighting. The roads were also used as a means of communication between distant parts of the empire. Specially trained men acted as messengers to carry information whenever necessary. These couriers running in relays carried messages with remarkable speed for hundreds of miles.

It is a remarkable fact that so many people eagerly accepted the Inca rule. This was partly due to the very generous policy that was adopted when a neighboring people had been conquered. Instead of killing them ruthlessly, the Inca kings tried to get them to accept their rule by showing the advantages that would come from joining the Inca empire. The conquered people felt that it was really better to belong to the empire and to be protected by a wise king than to be continually at war with quarrelsome neighbors.

The Spaniards came to find gold and to establish the Catholic religion. Although Pizarro had only a small number of Spanish soldiers, he easily took possession of Cuzco and seized control of the empire. He was able to do this because the Spaniards had firearms, while the Indians had only the simplest kind of arms, and because by trickery he captured the Inca king, Atahuallpa, and cruelly put him to death.

This death of the last king of the Incas is a sad story

and reflects little credit on the Spaniards. Pizarro and his men were allowed to march unmolested from the sea coast to the capital city, Cuzco, where Atahuallpa promised to receive them. He directed the Spaniards to the plaza of the city, where he promised to visit them with a small number of his army. Pizarro determined that this would be a good opportunity to seize the king. He felt that if he had possession of the person of the king the Indians would be alarmed and would not offer much resistance. When Atahuallpa came into the plaza of the city, at a given signal the Spanish soldiers rushed upon his followers and captured the king. Several thousand were massacred. After the king had been held captive for some time, he said that he would fill a certain room with gold as high as a man could reach provided his captors would set him free. The room was seventeen feet wide and twenty-two feet long. After several months Atahuallpa succeeded in getting enough gold to fill the room. When he demanded his release, the Spaniards claimed that he had been stirring up a revolt among his people and brought him before a court of their own for trial. He was subsequently declared guilty and was sentenced to be killed. The death of the king put an end to the resistance of his followers, and the Spaniards without much difficulty came into full possession of the Inca empire.

56. GETTING THE MEANING OF WORDS

This exercise is like the one on page 181. You are to guess the words which you think belong in the blank spaces, writing each word on a sheet of paper after the number in the blank space. Do not, of course, guess aimlessly, but choose a word that best fits the meaning.

IMAGINE yourselves in Master Ezekiel Cheever's schoolroom. It is a large, dingy room, with a sanded floor, and is lighted by windows that turn on (1) and have little diamond-shaped (2) of glass. The scholars sit on long benches with desks before them. At one end of the room is a great fireplace, so very (3) that there is room enough for three or four boys to stand in each of the chimney corners.

It is a winter's day when we take our (4) into the schoolroom. See what great logs of wood have been rolled into the fireplace, and what a broad, bright (5) goes (6) up the chimney! And every few moments a vast cloud of smoke is (7) into the room, which sails slowly over the heads of the scholars until it (8) settles upon the walls and (9). They are blackened with the smoke of many years already.

Do you see the venerable schoolmaster, severe in aspect, with a black skullcap on his head, like an (10) Puritan, and the snow of his white beard drifting down to his very girdle? What boy would dare to play, or

whisper, or even glance aside from his book while Master Cheever is on the lookout behind his (11)?

For such offenders, if any such there be, a rod of birch is hanging over the fireplace.

Now comes a class in arithmetic. These boys are to be merchants, shopkeepers, and mechanics of a future period. Hitherto they have (12) only in marbles and apples. (13) some will send vessels to England for all sorts of manufactured wares, and to the West Indies for sugar and coffee. Others will stand behind counters, and (14) tape and ribbon by the yard. Others will swing the blacksmith's (15), or drive the plane over the (16) bench. Many will follow the sea and become bold, rough sea-(17).

But, alas! while we have been thinking of other matters, Master Cheever's (18) eye has caught two boys at play. Now we shall see awful times. The two malefactors are (19) before the master's chair, wherein he sits with the terror of a judge upon his brow. Ah, Master Cheever has taken down that terrible birch rod! Short is the trial, — the sentence quickly passed, — and now the judge prepares to (20) it in person. Thwack! thwack! thwack! In these good old times a schoolmaster's blows were well laid on.

And thus the forenoon passes away. Now it is twelve o'clock. The master looks at his great silver watch, and says, "You are (21)."

— Adapted from Nathaniel Hawthorne's *Grandfather's Chair*.

57. IF YOU WERE A COLONIAL GIRL

If you had lived in colonial times, your experiences would have been very different from your present life. What they really were would depend upon where you lived. The Southern life and the Northern life were different.

Read the entire article quickly to find out the main facts. After you have done this, you will be ready to study the differences more easily. You will find this plan helpful. Take a sheet of paper and draw a line down the middle. At the top write *North* on one side and *South* on the other. Then list the differences, studying the article as much as necessary. The beginning of your paper will perhaps look like this.

South	North
1. Plantation life	1. Town or farm life
2. Many servants	2. Few servants

See how many differences you can state in this way.

SUPPOSE that you are a little colonial girl living long, long ago — about the year 1760, let us say. Your home is in the warm South and your father is very rich. This means that he owns many slaves who work in the fields for him, raising tobacco, rice, or indigo. These products are sent to England to be sold. Big sailing vessels come for them. Your father has his own pier at which the ships can be moored. In fact, most of the large plantations of the southern colonies are located on the slowly-moving rivers, in order that their products can be the more easily shipped. In return

for your father's crops, the ships will bring treasures from over the sea. There will be guns and all sorts of tools and supplies for the plantation. There will be silk and satins for mother, — and for you, too, for your dress is almost like hers, — handsome new clothes for father, and laces for all. There may be new furniture of mahogany or rosewood, and perhaps some new silver for the table.

Many a great dinner is given at your house. To it the people of the neighboring plantations are invited. Some of them have to travel all day in their boats or coaches, or on horseback, to reach your home, and of course they will stay over night or, it may be, over two or three nights. The old negress who has cared for you since you were a baby, and whom you call "mammy," helps you to put on your pretty silk stockings and your high-heeled slippers, your stiff stays and hooped petticoats. Your frock is a new one, of pink satin brocaded in a design of roses and leaves and trimmed with delicate lace. A younger colored woman dresses your hair. She rolls it and puffs it and piles it high on your head and then powders it. You have long white gloves like mother's, and even a little fan.

When all is finished you go to show yourself to your parents. They, too, are arrayed suitably for the festal occasion. Mother's gown is much like yours, but more elegant. Father's coat is of satin. He wears a white vest and satin " small clothes " (short trousers)

tied at the knees with ribbons. His stockings are of silk, and he wears pumps (low shoes) with silver buckles. His long hair is brushed back and tied with a black ribbon. Like yours, it is powdered. How fine you all look, and how happy you are!

Just one thing is lacking, and that is the presence of your older brother. But he is away at college. There are few colleges in the South, and many wealthy Southerners send their sons to Europe to complete their education. You have a teacher at home who is called a tutor. From him you learn to read and write and to speak French. Mother teaches you how to sew and pays a great deal of attention to your manners. When you are older you will learn to play the harp.

Presently you walk between mother and father down the broad stairway to the wide hall below. Here in a mammoth fireplace burns a crackling fire, and many candles shed their soft light about the room. You hope with all your heart that some of the guests will arrive soon, for the hour is fast approaching when you must go to bed. If only you might go to the big dining room with the grown-up people! You know how fine the table looks, with its damask cloth brought from Ireland, and set with china and silver that likewise have come from over the sea. The negro house servants, proud of their importance and of their master's wealth, will strut about serving the feast.

More delightful than the dinner, however, will be

the dance that follows. How the darkies will grin and sway as they draw their bows across the fiddles! How beautiful the ladies will look as they glide across the floor to meet their partners in dancing the stately minuet! Dark faces will peer in at the windows, for the negroes always come from their little log cabins to watch the " great folks " dance.

It does seem hard that you may not join in these gayeties, when they are free even to any passing stranger, — for father has sent " Big Sambo " down to the highroad to invite passers-by to the festivities. Mother reminds you that it is because she wishes to keep you well and strong that she sends you to bed so early. Mothers do take such care of their little girls! When you go out into the sunshine, she makes you wear a mask of cloth or velvet and long gloves to protect your skin from the sun's rays. Sometimes you wish your father were not so rich, for then you would not have to wear these bothersome things. The little girl who lives on the plantation adjoining your father's plays about in the sunshine without mask or gloves, and what a nice little girl she is!

It would be pleasant to know her and to play with her, but her father is looked down upon by his neighbors, because he was once an " indented servant." In order to pay for his passage to the New World, he bound himself out to work as a servant for a certain number of years. That was many years ago. He

has paid off his debt and has been able to buy a small section of land and a few slaves to help him work it. And now, though he may be scorned by the wealthy planters about him, he is proud of his success, and he and his family enjoy life in their new home.

Perhaps if you had lived in the days of the colonies you would have preferred to be a little Puritan girl in New England. In that case you must picture yourself in a smaller home. Most of the people of the northern colonies live on farms or in towns, not on large plantations. They keep few servants. The greater part of your housework is done by your mother and her daughters.

You are not likely to have any fine silks. The material of the dresses you wear you must spin and weave yourself. Close to the fireside in the long winter evenings you sit at your wheel. There you spin into thread or yarn the flax or wool that your father and brothers have raised. When you are tired of spinning you may pick up the stocking that you have partly knit. If you work rapidly you may be able to finish the stockings in time to make a pair of new mittens to wear to the next quilting bee.

What joys these quilting parties are, though they are only gatherings of friendly neighbors to work and to gossip together. The quilt itself is a wonderful thing. It consists of many, many pieces of cotton or woolen goods sewed together in some elaborate design. The

pieces may be of as many colors as the rainbow. You like them, for your Puritan parents seldom permit you to wear bright colors.

In quilting, the patch pieces are sewed to the lining with fancy stitches. The patchwork and several layers of wool or cotton wadding are basted to the lining. It is all stretched on a wooden frame, about which the quilters sit with their needles busy. The tongues fly as fast as the needles.

Perhaps the gossip is about a woman who was punished the other day for being a " common scold." Most of the quilters saw her in the ducking stool. She had slandered some of her neighbors, so she was fastened to a wooden seat and then ducked several times into water. This is not the only form of punishment in use in the colonies. Another is to put the offender into the pillory. This is a wooden frame which catches him at the neck and wrists and holds him fast, for all who pass by to gaze upon.

Besides the quilting parties there are other festivities, such as corn huskings and apple-paring bees. The men as well as the women take part in these, and great jollity prevails. You would much rather go to quilting parties and husking bees than to church.

The church service is long, and in winter the meeting-house is cold. The very poor have to sit farthest from the pulpit. There is a tithingman whose business it is to keep every one awake. He has a long rod with which

he raps the head of any man or boy who happens to nod. If it is a woman or little girl who grows drowsy, he tickles her face with a rabbit's foot attached to the end of his rod. The minister is a very great person, quite the most important man in the town, but he does preach dreadfully long sermons.

Neither is school a very comfortable place. The seats are hard, sometimes only a block or half of a log. And very often the room is cold, despite the fact that each child must bring fuel for the fireplace. If you go to such a colonial school, you make your own copy books, sewing foolscap sheets together. But paper is so very scarce that many children use thin sheets of birch bark. Instead of a pencil, you have a piece of lead that has been melted and cast in a wooden mold and then cut out with a jackknife. Your pen is made from a goose quill; the teacher fashions it for you, shaping it, with great skill, to just the right kind of point.

Books, too, are scarce. Nearly every child, however, learns to read from a hornbook. This, after all, is very little like a book, since it has but one page. On it are printed the alphabet, some syllables, like *ab*, *eb*, *ib*, etc., and a prayer. The paper is placed on a thin piece of wood about four or five inches long and two inches wide, and covered with a thin sheet of yellow horn. The horn and paper are fastened to the wood by a narrow strip of brass or some other metal. It is difficult to see through the horn, but the book is much

prized, so much so that some of your wealthy friends have had their portraits painted with their hornbooks hanging beside them.

Every pupil must first learn all the letters of the alphabet. Many a cold day you and your friends sit huddled in your coats, your hands blue and your brains numb, trying to learn the alphabet. The teacher hears you one at a time. When little Jonathan's turn comes, he cannot remember what letter follows *t*. He stutters and stumbles. When finally he gives up in despair, the teacher brings the rod down across his cold, stiff knuckles, and you cry in sympathy. Nor is Jonathan the only one who is punished for not knowing his lessons.

The people of colonial times in America, as everywhere, had to do without many things that we have come to regard as very necessary. Photographs, rubber shoes and coats, typewriters, sewing-machines, bicycles, and hundreds of other inventions had not yet been thought of. There were in those days no stoves or matches, no gas or electric lights, no daily newspaper, no telegraph, no telephone. There were no railroads, no steamboats, no automobiles, no airships And yet the colonists lived, for the most part, lives of contentment. They little dreamed of the conveniences to be developed later, which would make life for their descendants easier and in some ways pleasanter.

— From *American History, First Book*, by A. C. Perry and G. A. Price.[1]

[1] Copyright, 1913, 1914, by the authors.

58. THE DAILY BREAD OF ALL THE WORLD

This selection is from an encyclopedia and is full of interesting information about a very common article. You eat bread every day, and yet you may not know much about it. Naturally, therefore, you will be interested to find out what this selection tells you about bread.

You will find it helpful to make an outline of the facts you find here, because an outline helps one to understand and remember better. First read the selection carefully, and then look it through a second time, writing on paper the topic of each paragraph. Next study your topics to see if several of them may be grouped together under a common heading. The beginning of your outline might be the following:

I. Amount of wheat used in making bread.
II. Early bread making.
III. Two types of bread.

After completing your outline, be prepared to report on each topic.

BREAD is rightly called the "staff of life" of the white race the world over, for it is and always has been their most important food. At every meal we want bread; and if we do not have it, no matter what else there is, our meal is incomplete. Did you ever stop to think of the immense quantity of bread that is used every day in this country, and of the millions of people who are needed to grow the grain, grind the flour, make the flour into bread, and bring it to our table? Every person in the United States, it is esti-

mated, eats a barrel of flour a year. Imagine what a mountain this would make! If the barrels were placed end to end, they would go around the earth three times at the equator; and if they were piled one on top of another they would reach a quarter of the way to the moon! It takes five bushels of grain to make a barrel of flour. An acre of ground yields on the average less than 20 bushels of wheat, — which is the grain from which most of our flour is made, — so you can readily figure out what an immense area must be planted in wheat to supply the needs of the United States alone. Consider how much work the farmer expends in growing this grain; think of the network of railways all over the country that bring it to the terminal elevators; think of the more than 10,000 great mills that grind it into flour, and the thousands and thousands of bakeries that bake the bread; and you will see that the story of bread is one of the greatest and most interesting in the world.

Bread has meant a great many things since the world began, but it has always meant a cooked mixture of some kind of ground grains and water. Far back in the Stone Age, the earliest age of man that we know anything about, people used to make bread. We know this because hard little burned cakes have been found in their caves, with crude implements for crushing grain. These cakes were made of grain, usually wheat, slightly crushed and mixed with water. They were spread on a

hot stone with hot ashes piled on top to cook them. The result was little hard cakes gritty with ashes, and not much like the crusty brown loaves of bread, soft and white within, that we have to-day. The people who lived in Egypt 5000 years ago knew how to bake bread from white flour. They made little rolls about the shape of our muffins, and in Greece and in Rome we know there were public bakeries at a very early date.

All the various kinds of bread that people have eaten and eat to-day belong to one or the other of two principal types, leavened or unleavened. Leavened bread means raised bread — bread that contains yeast or some other substance to make the loaf light and porous. Unleavened bread does not contain this leavening agent, and as a result is dry and hard throughout. Certain forms of "water crackers" and "hard-tack" are examples of unleavened breads. Before man learned to make yeast, a portion of the uncooked dough was left from each baking and allowed to sour. This sour dough mixed with the fresh dough causes the whole to ferment; gas is formed and the bread is raised or leavened. This process is still used in far outlying districts where it is not possible to obtain yeast.

People who live in the country and very small towns usually bake their own bread, but in the larger towns most people get their bread from bakeries where thousands of loaves are baked. This is the universal custom in Europe, where it dates from the practice in the

Middle Ages, before stores were invented, by which a brick oven was erected in every village and a fee collected by the feudal lord for its use. In the big bakeries of a great city it is most interesting to watch the flour being made into fragrant loaves of bread. Everything about these big modern factories is scrupulously clean, and sunlight floods the rooms all day long. From the time the flour is prepared for mixing until the loaves are baked, the work is all done by machinery. First, the sacks and barrels of flour are placed on an electrically operated elevator and taken to the top floor, where the flour rooms are. Here the flour is carefully tested, and various grades are mixed until the special blend the baker uses is obtained. The flour is then sifted thoroughly and put into storage bins, ready for use. Just below these bins are the weighing hoppers. When flour is wanted, the scales are set and the flour comes down into the hopper until the required amount has been weighed, when the supply automatically stops. Pure water stored in big tanks, yeast, salt, sugar, and malt extract are added in exact proportions. The mixing is done in machines called " dough mixers," which hold half a ton of dough each. Steel arms, clean and shining, work back and forth, and mix the dough more thoroughly than could be done in any other way.

The dough is next emptied into large steel troughs on wheels and taken to a room where the temperature is just right for the bread to rise, or, as the bakers say,

" prove." The bread is left here for several hours and watched carefully. When it has risen to the proper point, it goes to the automatic dividing machines, which weigh out the exact amount needed for each loaf, cut it neatly off, and pass it to the rounding machines. After the dough has been made into balls, it is left to rise a second time, in what is known as an " automatic proofer." For several minutes it rides back and forth in the carefully maintained temperature of the dough room, and is then formed by the " moulding machine " into loaves to fit the pans. It is then trundled away to a room where the temperature is kept at 100 degrees — several degrees hotter than the dough room — for the final rising.

The ovens in a big bakery are built of brick and the walls are made very thick, so that they hold their heat for a long time. Even a week after the fire has been allowed to go out bread can still be baked in the ovens. Each oven holds from 300 to 350 loaves of bread at a time. There is a powerful electric light inside, so that the interior can be flooded with light when the baker desires to see the bread. The baking takes about 35 minutes. Just before the loaves are removed steam is turned into the oven to make the crust glossy. The housewife gets the same result by rubbing the loaf with butter or with cold water or milk just after it leaves the oven.

From the oven the loaves are carried on an endless

chain belt to the bread room. In some bakeries each loaf is wrapped in waxed paper by a machine into which the loaves go as they leave the oven. In factories where the bread is not wrapped, white-gloved workmen pile it in clean crates for delivery.

When bread is made at home it is usually mixed and kneaded by hand, sometimes in small mixing machines. Any good cook-book will give a recipe as to the proportions of yeast, flour, salt, sugar, and water or milk to use. After kneading, the dough is left to rise in a warm temperature, kneaded thoroughly again, made into loaves, left to rise again, and baked. Biscuits, cakes, pies, cookies, and doughnuts are all usually made with wheat flour, but baking powder is often used as the leavening agent instead of yeast.

Various countries have their own characteristic breads. The French lead the world in the quality and variety of their breads. Vienna bread is made in long slender loaves with a heavy crust of a pleasing nut flavor. In Turkey bread is made by mixing a batter of flour and water and baking it on hot rocks. Swedish bread is baked in hard flat round disks. Corn bread is the chief article of diet in many parts of the southern states, and there "bread" means corn pone, wheat bread being called "light bread." Bran bread is made by mixing a part of the outer husks of the wheat with the white flour. In graham and whole-wheat bread almost the entire wheat is ground in

making the flour. The "Victory Bread" made in the United States during the World War substituted a certain proportion of other cereals for wheat, to conserve the wheat supply. The " war breads " of Germany and other European powers often contained so much inferior food substance as to make them practically indigestible.

Of recent years crackers and biscuits (small thin cakes) have become enormously popular. In France and England all such cakes, whether sweetened or unsweetened, soft or hard, plain or fancy, are known as " biscuits." In the United States, " cracker " usually means a very thin cake baked until it is dry, crisp, and brittle, and the term " biscuit " is applied by bakers to various forms of small sweetened and fancy cakes. Both cracker and biscuit are used, however, as the general term for this whole class of bakery products.

The cracker industry has had a phenomenal growth in the United States since its beginning a little more than a century ago. To-day it ranks as one of the best organized and largest industries in the country. The first crackers were large round unsweetened and unleavened cakes, baked until they were very hard, something like the water-cracker of to-day. Because they kept much better than ordinary bread, they were in great demand for ship supplies and were often called " ship bread." At first they were made entirely by hand, but at the time of the great gold rush to California

the demand for this convenient food became so great that machinery was invented to roll the dough and stamp it into cakes. During the Civil War in America the army and navy called for such quantities of this "hard-tack," as it was called, that an improved oven was invented which increased the capacity of the bakeries by four or five times. This invention, which revolutionized the cracker industry and is used to-day in virtually the same form, is called the "mechanical reel oven." It consists of a number of flat pans attached to the arms of a revolving wheel, much like the famous Ferris wheel. Some of the large reel ovens to-day have a daily capacity of 50 barrels of flour.

The other varieties of cracker had also come into use by the time of the Civil War — the familiar "soda cracker" and the soft "butter cracker." These are made from leavened or raised dough, and so are lighter and more palatable than the old type of hard cracker, made from unleavened bread. Presently manufacturers began experimenting with various types of sweetened and fancy biscuits. These soon gained an immense sale which rapidly became one of the most profitable branches of the trade.

— Adapted from *Compton's Pictured Encyclopedia*.[1]

1. Define these words by their uses in their sentences:
porous blend indigestible palatable automatic

2. Compare your definitions with those in a dictionary.

[1] Reprinted by courtesy of F. E. Compton and Company.

59. MATCHES

You can learn to read rapidly by definite practice. It will do you no good, however, to read fast unless you get the meaning of what you read.

Do not begin to read this selection until you are told to do so by your teacher.

IT is such a simple matter now to get fire by striking a match that we do not realize how hard it was for people to make a fire a hundred years ago. In those days the father of the family usually started a fire in this way. He took a little iron box down from a high shelf. Inside of it were a bar of steel, a flint stone, and some pieces of charred linen, called tinder. He struck the steel on the flint, and a spark flew off on the tinder. Slowly the glow spread over the tinder, and if he was skillful enough he would get a flame by blowing on it and feeding it with shavings.

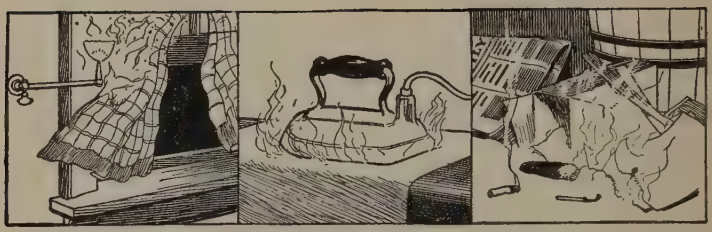
It was so much trouble to use the tinder box that every family in olden times tried to keep a fire over night in the fireplace by covering the live coals with ashes. If the fire went out, some one was probably sent with an iron kettle to borrow fire of a neighbor — perhaps a mile or so away. Hunters who lost their tinder boxes were sometimes forced to start campfires as the Indians did, by rubbing two sticks together a long time.

It was in the early part of the nineteenth century that matches that could be lighted by friction were invented. They were made by dipping the end of a little stick of wood into a mixture of sulphur and some other chemicals. Such a match was lighted by rubbing it on a piece of sandpaper.

In the course of time machines were invented to make matches. These wonderful machines do practically all the work. Blocks of dry wood two inches thick are put into the front end of the machine, and forty minutes later this wood is changed into matches. Some of these machines will make a million matches every forty minutes.

Think of the marvel of a machine which produces a million matches at a time. If all our matches had to be made by hand, they would be so expensive that few of us could afford to use many. Modern machinery, however, has made matches so inexpensive that we all use them freely, without having to give much thought to their cost.

The total number of matches used every day is enormous. This supply is large enough, it has been computed, for every person, big and little, in the civilized world to use eight matches a day.



60. FIRES AND THEIR PREVENTION

This selection, which was written originally for Boy Scouts, contains valuable information that every boy and girl should know. Read it very carefully and answer the questions at the end of the exercise. If you cannot answer them at once, study the selection until you can.

QUESTIONS

1. Count the number of pupils in your class, and then figure how much money fires have, on the average, cost that number of people in this country during a year.
2. If everybody had been careful, how much of this money could probably have been saved?
3. Of all the causes of fires mentioned here which do you think has caused the largest number of fires?
4. What should you not do if your clothing catches fire?
5. What would you do if you discovered a dwelling house to be on fire?

Fires and Their Prevention. Fire and fire fighting costs each man, woman, and child $4.56 each year, or over $18.00 per family.

The economic waste by fire in the United States amounts to $250,000,000 yearly, not to mention loss

of life. At least 50 per cent of these fires are preventable.

Fires constitute a danger as great as panics, and scouts should be equally well informed what to do in case of fire. It is the duty of a scout to know how to prevent fires.

Many fires are caused by carelessness.

Smoking is not only a bad habit but a dangerous one as well.

A scout is careful of disposing of a lighted match. He knows that it may fall upon inflammable material and start a fire.

Reading in bed by the light of a lamp or candle is dangerous, for if the reader goes to sleep the bed clothing is likely to catch fire.

A scout may often have to dry his clothes before a fire, and if so they should be carefully watched.

Hot ashes in wooden boxes or in barrels are responsible for many fires.

In camp, dry grass should be cut away from the locality of the campfire; and not to put out a campfire on leaving a camp is criminal. Many of the great fires in our forests have been due to carelessness in this respect.

In old forests there is often a thick layer of humus (dead leaves, etc.) on top of the earth. A fire built on this may run deep in it and only appear on the surface many feet or yards away, perhaps after a long interval.

In such forests you should spread a thick layer of sand or dirt on the humus and build the fire on this.

Fires also result frequently from explosions of gas or gunpowder.

A room in which the odor of gas is apparent should never be entered with a light, and in handling gunpowder a scout should have no matches in his pockets.

How to Put out Burning Clothing. If your clothing should catch fire, do not run for help, as this will fan the flames.

Lie down and roll up as tightly as possible in an overcoat, blanket, rug, or any woolen article.

If nothing can be otained in which to wrap up, lie down and roll over slowly, at the same time beating the fire with the hands.

If another person's clothing catches fire, throw him on the ground and smother the fire with a coat, blanket, or rug.

Remember that woolen material is much less inflammable than cotton.

What to Do in Case of Fire. A fire can usually be put out very easily when it starts, and here is an occasion when a scout can show his presence of mind and coolness. At first a few buckets of water or blankets or woolen clothing thrown upon a fire will smother it. Sand, ashes, or dirt, or even flour, will have the same effect.

If a scout discovers a building to be on fire, he should

sound the alarm for the fire department at once. If possible he should send some one else, as the scout will probably know better what to do before the fire engine arrives. All doors should be kept closed so as to prevent draughts. Don't enter a burning building unless it is necessary to save life. If you have to enter it, however, crawl downstairs backwards if the air is bad, close the window or door after you, and leave some responsible person to guard it so it will not be opened and cause a draught. In searching for people, go to the top floor and walk down, examining each room as carefully as possible. If necessary to get air while making the search, close the door of the room, open a window, and stick the head out until a few breaths can be obtained. Afterward close the window to prevent a draught. If doors are found locked and you suspect people are asleep inside, knock or pound on doors to arouse them. If this produces no results, you will have to try to break down the door. While searching through a burning building it will be best to tie a wet handkerchief or cloth over the nose and mouth.

Remember that the air within six inches of the floor is free from smoke, so when you have difficulty in breathing, crawl along the floor, with the head low, dragging any one you have rescued behind you.

— From the *Boy Scout Manual*.[1]

[1] Reprinted by courtesy of the Boy Scouts of America.

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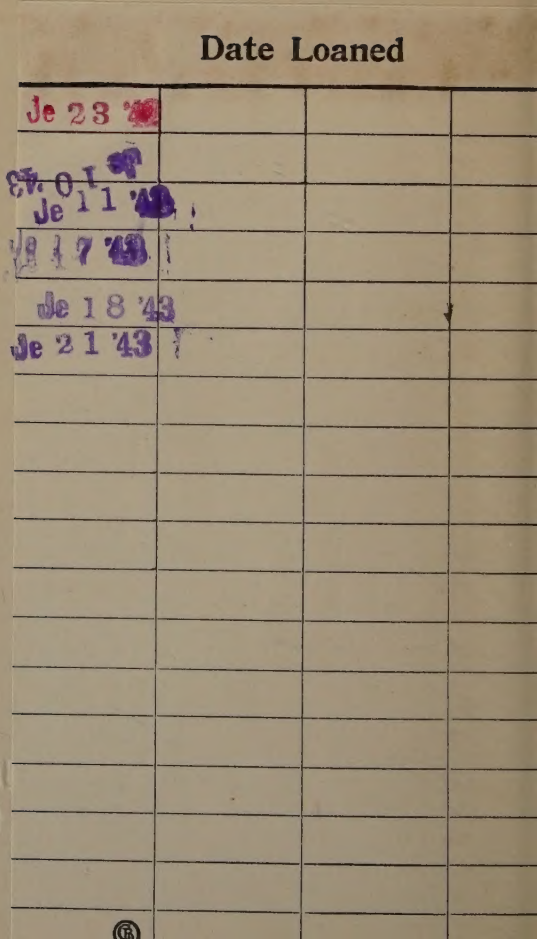
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